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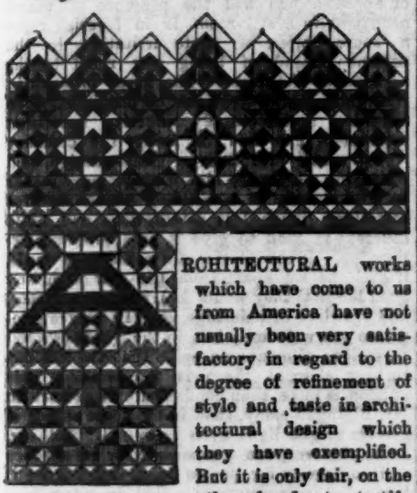
Hospital Construction and Organisation.



ARCHITECTURAL works which have come to us from America have not usually been very satisfactory in regard to the degree of refinement of style and taste in architectural design which they have exemplified. But it is only fair, on the other hand, to testify that in dealing with purely practical matters of construction and planning we not unfrequently find the Americans are ahead of us. When they are in earnest about these matters, they go more systematically to work than we do, and with a more defined determination to get at the best way of doing the thing. In some papers which came before us in regard to the best planning and construction of schools some time ago, we observed a thoroughness of systematic investigation in reference to the effects of every form of building or method of lighting, upon the health of the pupils,—investigation based upon the collection of an immense mass of statistics,—which certainly quite outdid anything that has been done in regard to discovering the best form of school in England, even by School Board officials, and now we have a book from America on hospital arrangement which even more decidedly illustrates this tendency to give ungrudging trouble and time to finding out the best way of doing a thing. Whether or not the architects succeed in carrying out adequately the best thing, when it is discovered, is another question, which we can hardly undertake to answer; but the good intention on the part of those who are about to erect buildings which may be of important effect on the health of thousands, is unmistakable, and cannot be too much commended.

The thick book* which deals with the subject named at the head of this article, and appears to have been some three or four years before its own public, is the result, indirectly of a bequest of a wealthy citizen of Baltimore, the late Mr. Johns Hopkins, for the purpose of having erected the best hospital possible for the town, with special instructions to his executors "to obtain the advice and assistance of those at home and abroad who have achieved the greatest success in the construction and management of hospitals." In pursuance of this recommendation, the committee asked for the detailed views and suggestions of five eminent hospital physicians. This, it may be said, only meets the second half of the recommendation in regard to management, and they do not seem to have invited the opinions of architects. But the five medical councillors appear to have very practical ideas on planning and management, and probably themselves got the assistance of architects or surveyors; indeed, one or two of them mention that they have done so.

Be that as it may, we are certainly struck by the thorough manner in which, in some of these essays, the absolute conditions of a perfect hospital are considered in detail and *ab initio*, without the slightest reference to mere precedent or to purely architectural considerations. These latter are, in fact, regarded as hardly existent at all in the question; and though, of course, it has with us for some time back been recognised in theory that this should be the case, and in the present day the instructions to competitors for hospital designs nearly always contain the provision that the buildings must be plain and that architectural effect is a secondary matter, it is equally true that these conditions are hardly ever observed, and that there is still a hankering on the part of the architectural mind to make palaces out of hospitals whenever there is a chance. Yet if there is any truth in what Dr. Caspar Morris records in his essay in this volume, that some of the largest, most imposing, and most costly structures that have been erected in France and England are radically deficient in regard to their real aim, the provision of the most favourable circumstances for the recovery of health and the avoidance of fresh causes of disease among the inmates, and that no permanent and costly structure can ever hereafter be erected for the treatment of disease, "except as a monument to the pride of some aspirant after posthumous fame," it must be admitted that we have still much to do and to undo, before we can be said to have done all that human care and ingenuity can do to attain in such buildings the best conditions for their main object.

Among the practical points which are thoughtfully discussed in the volume before us, the first which may be named is the largest and most general question as to the best principle for the general arrangement and grouping of the buildings. It is almost needless to say that all the contributors adopt the pavilion system in one form or another, but there is considerable difference of suggestion in regard to the manner of grouping and intercommunication, and still more in regard to the question of two-storied or one-storied buildings. Recollecting the great several-storied masses of our leading hospitals, it ought to be somewhat startling to their managers to find medical men of long experience still speaking in the strongest terms in favour of one-storied ward-blocks, and regarding two stories as, at all events, the maximum which need be considered at all. Of course, from London, the natural answer would be that it is simply a question of providing sufficient room for receiving the average number of cases, and that a restriction to one-story wards in our hospitals would, under the existing state of property, simply mean that two-thirds of those who required aid would get no hospital accommodation at all. How far it would be the wiser economy, when further opportunity occurs, to lay out a large proportion of money on the ground for a great hospital, securing a sufficiently extended site for the application of an ideally perfect system, is almost too large a question to be considered in the course of this article, and one on which it would be, perhaps, premature to pronounce a very decided opinion until we know better what London in the future is going to be, and what scope will be left to future administrators for carrying out what now may seem almost utopian schemes. All that is said, however, goes to confirm the truth of an assertion made by us some years ago, when we took a leading part in bringing about a reform in hospital construction, and which assertion may still be repeated, that many a sufferer would have a far greater chance of life in a canvas tent, on a bare common, with an old woman to tend him, than he would have in one of our town hospitals with the best professional skill applied to his case.

The first of the essays before us is by an army surgeon, Mr. John S. Billings, and not unnaturally his peculiar experience leads him to emphasise certain ideas in regard to the plan and construction of hospitals derived from this experience. He is, more than any of the essayists, in favour of reducing the permanent building to the plainest and simplest type, and goes so far as to recommend the adoption to a great extent of temporary and destructible wards similar to those which have been found to answer well in military experience in the field, even recommending tents for a part of the hospital accommodation. The idea need not be immediately dismissed, but it is necessary to remind readers of the grounds upon which a proposition of this kind is made at all. To those who have no personal experience of hospitals, they are probably merely buildings affording shelter to the patients, and bringing them together, so that the efforts of a medical or surgical staff can be concentrated upon them with the least loss of time and labour. But, in fact, a hospital is not only the place for the cure of accidents and diseases, but is itself, unless the most favourable circumstances are secured, and the most continual care and vigilance exercised, a place where disease originates and is fostered tenfold more than anywhere else. The congregation of a large number even of healthy human beings as continual residents in one building is attended with great difficulty in securing sanitary conditions. What must it be where all the persons thus collected are suffering from disease, often contagious, and accompanied by the continual giving off of

* Hospital Plans. Five Essays relating to the Construction, Organisation, and Management of Hospitals, contributed by their Authors for the use of the Johns Hopkins Hospital, of Baltimore. New York: W. Wood & Co. 1875.

diseased particles from their bodies? Life in a hospital is a fight against the disease tending to breed there, and to leave its germs to benefit the next comers; and the utmost vigilance in cleansing, and precaution against the lodgment of infected matter, only succeeds with difficulty in keeping the enemy down. It was on this account that during the Crimean war, and we believe elsewhere, the system was adopted of periodically destroying hospital huts, and building up new ones of new materials, as the only effectual means of making a clear start with a healthy room; and this is the system which it has been proposed by Mr. Billings to introduce into permanent hospitals. In this country, certainly, we must feel that climate is a good deal against slight wooden erections during most of the year, and that on the whole it would be a doubtful advantage with us to fix on a hospital a permanent charge for taking down and putting up sheds, which could only be useful during a certain part of the year, and would in winter weather occupy ground which would thus be rendered useless. But the idea, which was long ago promulgated by a well-known Scotch surgeon, is worth repeating, and in summer weather it might be found a good resource for the housing of a few cases of a kind specially in want of airy situations, and specially liable to leave seeds of disease behind them.

The question of single-storied wards rests on another basis. There is very much to be said for it on account of the far greater facility afforded for good ventilation in a ward that has only the roof over it, as compared with one that has a flat ceiling and another room over it. It is noticeable that the contributor of the fourth of these essays,—Dr. Caspar Morris, who is in favour of two-storied wards, — recommends them not only on the ground of economy of space, but because he has always noticed that the upper wards are more healthy, on account of having more light and air. This is, in fact, only repeating the chief arguments against two-story wards in another form, that the lower ward is never so well ventilated as the upper. The argument on account of economy in space is not quite sound, for one-story wards can be built closer than two-story ones. Another reason in favour of the one-story system is the difficulty of preventing the vertical passage of contagion from one ward to another by lifts and staircases, though it is possible, by careful arrangement of staircases nearly or altogether external, to minimise this. We should have no hesitation, however, in saying that the one-story system has nearly all the positive advantages in its favour; it is only a relative question of building space and expense.

The whole of the plans recommended in these essays proceed on the assumption that the buildings, whatever their number of stories, are to be raised on a basement, which will not only isolate the buildings more and give them more air and light, but will afford means for ventilating and warming apparatus being arranged in the most complete manner. Let it be supposed that the form of ward and the disposition of the ward buildings on the land is determined upon, it may be observed that an important point in this latter is, in most cases, the planning of the whole so as to admit of subsequent additions without either crippling the building at first or interfering with its arrangements when the additions have to be made: otherwise, there must be the dilemma, in any increasing town, of a hospital disproportionately large at first or too small eventually. And say that we discard altogether the notion of temporary or destructible buildings, what are the best conditions for keeping the permanent building completely cleansed and healthy? Those who have not been led to consider the subject from a medical point of view will be astonished at the rigid nature of the precautions urged against the chance of poisonous matter collecting in and about the ward buildings. "Whatever," says Mr. Billings, "may be the opinions held as to the nature of diseased germs, and their mode of origin and propagation, they are what we have to fear and to provide against in the construction of a hospital." Not only are they on "the dressings, the sponges, the instruments, and apparatus," but "wherever there is a ledge, a projection, or crack in the ward, these invisible particles are liable to lodge, and becoming dried, to be displaced by currents of air. Under certain circumstances it is probable that a single one of these particles is sufficient to set up a morbid process if brought into contact with the living body." Accordingly, everything that can catch dust in any way is a danger. Dr. Folsom says, "the finish (of the walls), especially in wards, is advised to be perfectly plain, without mouldings; and where projection is necessary, as in the casing over a door or window, the upper surface should slope towards the floor at an angle of 45° so as to facilitate cleansing." This latter hint indeed might be adopted for many things in private houses which are made with flat tops, unnecessarily, and become gathering-places for every kind of dust. To continue our doctor's directions:—"The inside of the walls should either be plastered directly on the brickwork, and so prepared as to be hard, smooth, and impermeable, like stone, so that they can be freely scrubbed; or, if this is impracticable, very thin furring should be so attached as to be easily removed and replaced; and this renewal should be made in the buildings occupied by patients at least as soon as the plaster becomes cracked or marred. . . . However constructed, the walls should have all corners and angles rounded to prevent accumulation of dust, and allow of ready cleansing. This is especially desirable at the junction of the base-board and floor, where a broom is apt to leave more or less dust in spite of of care." The author gives a full-size section of his method of connecting flooring-board and skirting-board with a concave strip of some 3 in. wide, tongued into flooring and skirting-board. This is the best way if the floor must be of wood. We should have rather had the impression that for a system of ground-floor wards, with basements under them which could be arched, a cement floor would have answered the conditions of sanitarians better than anything else; and in that case the rounded angle could be more effectively made in cement than in any other way. Dr. Folsom recommends for floors "strips of hard wood, not over 2 in. wide, tongued and grooved and blind-nailed" (punched). "On the whole, the application of boiled linseed oil is believed to be the best way of treating the floors. . . . . The walls of all these buildings are recommended to be constructed of brick, with a closed air-space, except in the corridors, where a single 8-in. wall will be sufficient; and painted outside to ensure dryness" (?). "If stone trimmings are used, they should project as little as possible from the surface, as any irregularity interrupts the free sweep of air, and gives opportunity for dust to collect. Especially in those buildings occupied by patients, relief to the eye should be obtained by variation in colour rather than by projections or depressions in the walls." Dr. Caspar Morris is equally strong in regard to the internal treatment of the wards. "Wooden mouldings are wholly inadmissible, as shrinkage will allow or form cracks or fissures, harbours for vermin and pockets for the retention of the morbid emanations and exhalations of the sick. Similar objections apply with equal force to all cornices and ornaments to ceilings, of moulded plaster. . . . . It is impossible to lay too much stress on the necessity of avoiding, in every part of the building, everything which shall have a tendency to catch dust, conceal dirt, or afford a harbour for vermin of any kind." For the floors he recommends, like Dr. Folsom, thin strips of hard wood, "such as is not liable to be scarred by the thoughtless dragging over it of a heavy bedstead, &c. Every such bruised or frayed spot becomes a pocket for the reception and emission of pestiferous contamination. The hardest and closest-grained wood should be secured without regard to cost; and the *utmost accuracy* in the adjustment of joints should be demanded. . . . . One open seam or splintered edge of a joint may become an irremediable source of contamination, in a ward otherwise well constructed." The floors thus made and laid he recommends to be imbued with oil coloured with some dark substance, the latter stipulation in order to avoid the unsightly appearance of stains from the accidental overturning of things, and other causes, which cannot be quite avoided in the most carefully-managed ward, and which leave unsightly stains on a light-toned floor. Another essayist recommends glazed tile linings for the walls: this would be admirable in summer, but it would be found, we think, to produce rather too cold a room in winter. It must always be remembered, too, when walls are rendered impermeable, that extra provisions must be made for the supply of fresh air and the removal of foul.

The question how far anything like architectural beauty can be imparted to a hospital, internally or externally, under such rigid requirements and limitations, is of course not without interest. Dr. Caspar Morris, the most exacting of all our essayists in regard to the requirements for the achievement of perfect internal cleanliness and freedom from lodgment of matter, is, nevertheless, rather pressing in his demand that the exterior should be attractive to the patient. In this we entirely concur, provided it be possible; but the fact is that, after all, architecture is "play," and a hospital administration is such very serious "work" that anything which does not conduce to its main object seems an impertinence; the more so, of course, if it is proved to be an actual source of practical evil. So far as the cheerful and attractive look of a place affects the health and spirits of the patients, appearance and design come under the head of practical subjects. But it is probable that a general air of cleanliness and cheerfulness, which is attainable with the very simplest forms of buildings, is all that a patient suffering under serious illness or a severe accident is the least capable of appreciating; and the presence of mural ornament in a sick-room is in feverish cases a source often of acute irritation to the patient instead of being any relief to the appearance of things.* The great mistake in the architectural treatment of hospitals, when anything architecturally effective has been attempted, has lain in using the ordinary "properties" of Italian or Gothic design, and conveying merely the idea of an ordinary rather palatial house, in a building which requires something much less ostentatious and quite different in kind to give it an appropriate expression. In the interior of convalescent wards, if such be set apart from the rest (as in any good hospital they would be), mural ornament, and drawings or paintings, may be very appropriate and welcome; but in the wards devoted to serious ailments we opine that the less disturbing element there is the better. This opinion is more than confirmed by a remark in Mr. Billings's essay, that in the acute stages of disease bright light even is an evil. Nothing, as he observes, can compensate for its absence or insufficiency for people in health, but he is "satisfied from observation that in many cases of acute disease the glare of a large, white-walled, many-windowed hospital ward does harm very much in the proportion in which it inflicts discomfort," and for this reason alone he urges the separation of acute from convalescent or chronic cases. Another sanitary point upon which we observe that nearly every contributor to this volume insists strongly, is that there should always be one ward in the hospital empty, with windows open, "undergoing Nature's process of purification," and the wards should in this way be left to stand empty in rotation; so that if there were twelve wards, each would be empty for one month in the year. Is this rule at all observed in English hospitals?

Problems of warming and ventilating are of course not essentially different in the case of hospitals from their general conditions in overcrowded buildings, except that the demand for full and ample ingress without cold draughts, and for rapid extraction, is more than usually emphatic in the case of a hospital. A great deal of thought and attention is given to it in these pages, and a good many suggestions and diagrams are given for the perfection of system in regulating heat and air supply, which it would lead us too far to go into here.† It may be observed that all the recommendations are in favour of open fires as at least a very important accessory, not so much in regard to warmth as to ventilation, and not only in the angles of a ward, but in the centre, in the shape of a stove for extracting more efficaciously the vitiated air from the centre of the room. Whether each ward block should have its own self-contained system of ventilation, or whether one central extracting-shaft should be used, is a question of some importance, and which circumstances would have to decide; in all probability the central extractor would be most economical in a small hospital of only a few pavilions, but would become hardly practicable in a more extended establishment. Some of

* We have heard a man who had recovered from a fever describe how, during many stages of his illness, the elaborate pattern of the wall-paper was a source of perfect agony to him, part of his delirious illusion being that he was compelled to trace its windings from end to end.

† One desideratum in regard to heating may be mentioned, which we feel sure is often neglected,—that of taking the heating system through the water-closets as well as through the wards. Indeed, this ought to be done in good private houses much more than it is; many weakly people probably get the seeds of illness from a sudden chill in a water-closet in cold weather.

the provisions which are considered *de rigueur* in the more advanced English hospitals are here very decidedly called in question; one of these is the "foul-linen shoot." Dr. Caspar Morris allows, indeed, of a lift for carrying them down to the basement. "The usual mode of gathering the soiled garments in baskets or in the arms, and carrying them through the wards and down the stairways, diffuses the foulness and disseminates the seeds of disease. But even this, disgusting and improper as it is, is preferable to the sluttishness of throwing them loosely down a shaft, contaminating the walls by their contact in descent, and then lying at the bottom to undergo at least an incipient stage of putrefactive change, and to send the poisonous influence through the shaft back to the ward." His plan is, a metal-lined box on wheels with indiarubber tires, which can be run to the foot of each bed when changes are made, and in which the soiled articles can be at once deposited and drawn to the opening of the lift, and the box sent down with closed lid to the basement, and thence directly to the laundry. The box can then be scoured and cleansed in a place set apart for the purpose. We might add a suggestion, whether the use of lifts in large hospitals for conveying the patients to upper stories does not need modification in detail. We have seen lifts in many-storied hospitals, and those which boasted to be of advanced construction, where the lift was simply an ascending platform going up a bare and nearly dark well, a method of ingress which we should think was calculated to have a most depressing and even alarming effect on a patient in a nervous and impressionable state of disease. It should surely be an ascending *room*, where the well and the movement up it would be invisible to the occupant. It may be observed that in vertically-arranged hospital blocks, especially if of many stories, all lifts and staircases require the greatest care in placing and construction, in order to avoid their being lifts for contagion,—a danger the existence of which is one of the strongest arguments in favour of one-story hospitals when circumstances allow of them. For a similar reason, corridors parallel to the wards, and opening out of them, for affording exercise for patients who are able to walk a little, are to be condemned. They receive the foul air from the wards, and act as channels for conveying it to other parts of the building. The ward blocks must necessarily have connecting corridors, and it is suggested by one of our essayists that an open verandah on the south side of such corridors affords exercising-ground without the evil effects of the corridor contiguous to the ward, and which also shuts out the light and air from one side of it. How far and how quickly contagion can travel in a badly-planned hospital may be judged from one fact mentioned in this book, that in the great ill-planned military hospital at Netley, "where the wards and corridors are so improperly constructed as to *favour* communication" [an error which we pointed out before the building was erected, and were sneered at for so doing], "the opening of an abscess filled with peculiarly offensive fluid in one ward was promptly recognised in another on the same floor at a distance of one-third of a mile"; and, of course, where smell travels, contagion travels.

We have said enough to indicate that there is much in the book we have been commenting on that is well worthy to be marked, learned, and digested,—a good deal more, in fact, than we can give any indication of; and its perusal will certainly suggest how very much those who build hospitals in this country have, if not to learn, at least to put in practice, before we can have a hospital that is a model of its kind. We have it on the authority of one of the first surgeons of the day, that there is not in England at present anything that can be called a model hospital, or near to it. And we fear the fact is, that architects who are asked to carry out such buildings do not really grapple with the problem. They get some general rules and look at some existing hospitals, and then make a building with pilasters and cornices, or mullions and arches, in the orthodox arrangement, and an interior adequately ventilated and sufficiently convenient in its general working arrangements, but destitute of those score or so minor details which go to make the difference between a real solution of the problem of a perfect hospital, and the mere random shot at it.

We should be interested to know from the trustees of the Johns Hopkins Hospital, if the building for which this volume of recommendations was made is completed, what have been the results following this exceptional amount of consideration and forethought.

A MASTER-PAINTER.

IT is agreeable in England, where we daily see noble acts of public and private benevolence, to bring forward the example of a foreign, and hence, probably unknown, benefactor. The practical nature of the acts of his life, which could not fail to interest a large number of our readers, led us some years ago to speak of M. Leclaire and the arrangements in his workshops in Paris for the advantage of his men. His instructive biography has been written by M. Charles Robert, and appeared not long since. We make a summary of this from the pages of a recent number of the *Magasin Pittoresque*. It is a story which in able hands would afford ample matter for instruction. His life shows an untiring effort to ameliorate the condition of those about him in his employ, and who followed the trade in which he had made a career, that of a house-painter.

Edme-Jean Leclaire was born at Aisy-sur-Armançon (Yonne) in 1801. His father was a poor cobbler. At ten years of age the boy was obliged to leave school, barely able to read or write, but he had to earn his livelihood. At first he was a shepherd, then he apprenticed himself to a bricklayer, and eventually became a harvest labourer. One day he left his village in company with a band of these roving adventurers; he was at this time seventeen years old. After having in this manner travelled over a large portion of the country he reached Auxerre; some of his companions were going to Paris, and he determined to follow them.

Many, like Leclaire, have arrived at the French capital, and many, like him, young, without friends, without money; but how many have had his energy and perseverance? Wandering in the streets, begging for employment wherever the occasion presented itself, refused everywhere, luck took him to the Place du Châtelet, where the house-painters used then to assemble. There, he said,—and in after-life he used to tell the tale,—"there, at least, the contractors come to look out for their workmen. It is true they generally give the preference to those they know; as to those they have never seen before, they employ them according to the more or less favourable impression their faces make on them." Leclaire must have made a good impression on some one of the discerning contractors, and he was immediately engaged as an apprentice.

The work was hard, the pay small; a piece of bread in the morning, two sous, a penny a day, supper in the evening, and a shake-down with the master. The apprentice had often many a distant errand to run in the evening; exhausted with fatigue, he got up behind the cabs and carriages, and many a time was he made to feel the coachman's whip. In happier days he used to like to tell the tale of the misery of these his years of struggles and mortification, but it was always with an entire absence of bitterness. When he became at length a master workman, he often used to remind his apprentices, with a smile on his lips, "You are better treated than I was."

After his meagre supper, the young man climbed up to his garret; not having any money to buy books, he borrowed those of his master, and in this manner he taught himself. At twenty, Leclaire was a good workman, gaining his three and four francs a day. Out of his wages he contrived to save up twenty-four pounds, to insure himself against the chances of the conscription, and purchase a substitute. Not long after this, he marries. He continues to put by money, and, with a capital of barely forty pounds, he sets up on his own account, and undertakes a number of important contracts, to the surprise of all who knew him.

Simple, modest, and gentle, his faith is always in the future; as a master, he works like his men, and encourages them by his example; he barely snatches a few moments of repose, as he eats his mid-day meal, brought to the shop by his wife in a small basket. But by this means, from his humble commencement, his business rapidly increases.

Before many years are out we find Leclaire at the head of one of the best houses in Paris. His name is respected; by his intelligence, his activity, his rigid probity, he inspires absolute confidence in all who entrust any work to him to carry out.

At this period white-lead was used for house-painting, and the workmen were constantly attacked by grave and frequent illness. Leclaire, after a self-made inquiry, discovered that out of a hundred of the men attacked, thirty suffered from "lead palsy." From this moment his sole thought was to replace white-lead by a substance which should be innocuous to those obliged to use it. There was, it is true, zinc-white, but zinc-white at this time was very dear, and its price prohibited its use for house-painting purposes. Leclaire did not allow himself to be daunted for a moment. He began to study chemistry; the illustrious *savant* Chevreul aided him with his counsels, and, under his direction, Leclaire, after many fruitless efforts, finally discovered (in 1844) a process by which zinc-white could be produced at a cheap rate, and yet dry as rapidly as white-lead. "It was a revolution in the trade," says M. Charles Robert; "two camps were immediately formed; on one side the consumers of the poisonous white-lead, attached to the old routine with their pale, emaciated workmen exhausted by long illness; and opposite them the partisans of zinc-white, at the head of their men, fat and well-looking, an air of health and triumph on their face."

By substituting zinc-white for white-lead, Leclaire rendered the workmen of his profession a service which they ought never to forget. But he rendered them other services; he taught them order and thrift. An old workman, he was constantly turning his attention to the consideration of the existence of his comrades of the days gone by. "I felt this impression," he once said, "that the day that I retired from business, the workmen who remained attached to me could not do the same. I then thought that I should not enjoy complete happiness as long as I remembered the fate of those who had in great measure contributed to help me to pass my old days happily." Noble words these, soon to be carried out in acts. By the foundation of a provident society, a retiring fund, and later on, by abandoning a large share of the profits to his workmen, as a co-operative society, Leclaire saw that the future of his men was insured.

He did much, we see, for those he employed, in exchange for which he exacted two things: regular work and an honourable life. It was only on these conditions that admission was obtained to his establishment, and on these conditions alone the workman ensured his remaining there. Leclaire is dead, but the system he founded did not die with him. The rules which he had established are religiously observed by his successors; the association he formed has continued to prosper and develop; the apprentice receives a well-directed professional education, the sick find the attention and care of which they may have need, the aged workman enjoys a sufficient retiring pension.

Leclaire, who had retired from business some years, died on July 13th, 1872, aged seventy-one. His courageous wife had died before her husband. Till the last day he lived alone by the thought and recollection of her who had been for him so worthy a companion; by a sentiment of touching piety, he desired that at each meal her place might be laid before the chair she had occupied for so many years.

The life of this good man is a lesson for all, for men and masters alike; poor, he had raised himself from his humble position by obstinate work, rigid probity, and daily economy; rich, he well understood the fact that so few seem to take to heart, that if fortune possesses its rights and its enjoyments, it possesses also its duties.

Masonic Hall and Club, Kidderminster

A building for a Masonic Hall and Club at Kidderminster was opened on the 19th inst. by Sir Edmund Lechmere. Some premises in Mill-street, recently purchased by the Masonic Hall and Club Company, have been adapted to the requirements of the company. The premises to be used for Masonic purposes consist of a lodge-room, 55 ft. by 21 ft., and 20 ft. high, with adjoining robing-room, 15 ft. by 15 ft., and ante-room 16 ft. by 11 ft., store-room, and lavatory. The club contains a billiard-room, 34 ft. by 17 ft.; a general room, 18 ft. by 17 ft.; dining-room, reading-room, and card-room, each of the latter being 17 ft. by 15 ft.; committee's, secretary's, and other rooms. The alterations have been carried out by Mr. Price, builder, under the direction of Mr. Meredith, architect. The total cost is about 2,500*l*.

THE PROGRESS OF GERMANY AS SEEN IN THE SYDNEY EXHIBITION.

Sydney and Melbourne were from the first rivals. New South Wales calls herself proudly the mother colony; Victoria relies on her greater industrial and commercial importance. Neither colony will be second to the other, neither desires to be behind in the path of increasing internal development. To this rivalry must be attributed the invitations which the world has received for two exhibitions following closely upon each other.

With this, however, we do not intend to deal; our principal object is to convey an idea of the share of Germany in the exhibition. In looking through the building, we have not been bound by any classification, such as is customary in writing exhibition reports, our first object being to make our account readable and interesting. Thus, in taking a ramble over the whole, the most salient features only have been selected, and comparisons instituted, no matter whether they be odious or the reverse. The English section may be described as excelling in quality, for there is very little of cheap manufacture; but it wants some points of excellence in which the German department is rich. The decoration of the German section is the handsomest of the whole exhibition. If fault could be found, it is this, that the Germans have been very tardy in completing their share of the exhibition, and thus permitted a slight prejudice to take root from the commencement; while, on the other hand, the space allotted is not nearly sufficient for the quantities of goods sent, so that many really good things are shown at a disadvantage.

As to the participation of German industrials in the exhibition, it has been pretty general, although several eminent manufacturers, shining in their several branches, are conspicuous by their absence. The principal parts of the German section are those comprising musical, optical, surgical, and scientific instruments generally, educational material, and some of the manufactures and machinery.

Germany has taken great pains; expressed in sums, her exhibition has a much higher value than the sections of most of the other countries. In the German section, pianos represent, perhaps, the greatest value, and it is expected that none of them will cross the ocean again. The same holds good of many other articles.

According to the catalogue, the 695 German exhibitors are represented in 137 out of 566 classes, a performance equalled by no other nation but England.

In the art-exhibition, sculpture is represented by Begas, Hartzer, and Schulz. Painting has representatives in Andreas Achenbach, Von der Beck, Becker, Beckmann, Von Cramer, Von Eckenbrecher, Fahrbach, Friedrichsen, Heyden, Hübner, Jutz, Knackfus, Lasch, Oemichen, Schanche, Seypel, Schulz-Breesen, Schüz, Van Starkenborgh, Wagner, all artists of Düsseldorf; Arnold, Baisch, Baumgarten, Braun, Dehn, Gaisser, Gräfle, Grob, Hellrath, Hoff, Horst-Hacker, Kronberger, Langko, Lindenschmit, Lossow, Mali, Marc, Mayer-Wismar, Munsch, Von Poschinger, Roux, Rögge, Seitz, Strecker, Wellroider, all of Munich; Douzette, Eschke, Grünfeld, Huth, Von Kameke, Körner, Von Löfen, Ockel, Schrader, Steffeck, of Berlin; Brendel, Linnig, sen., Linnig, jun., Rettig, Sturzkopf, of Weimar; Oehme, Schultz, Thiele, Thomas, of Dresden; Koken, of Hanover; Ruths, of Hamburg. It should, however, be remarked that many of the less known paintings have been sent to Sydney by art-dealers, more especially by the firm of Pietro del Vecchio, of Leipzig. Next to England, Germany will be the country most strongly represented in the art-department of the Exhibition.

The German standard floats over the foremost tower, beneath which the building is entered. Inside, the statue of her Majesty the Queen looks in a straight line upon the German imperial eagle, which adorns the entrance to the principal German space, where also the German arms are placed and names of German towns are inscribed. Some important objects of exhibition have been placed likewise outside, or in the wide transept crossing the whole exhibition building, for instance, a five-armed cast-iron candelabrum from the Lauchhammer Ironworks. Next to the entrance are two lions cast in zinc (A. Castner & Co., Berlin), as well as two youthful allegorical figures of Trade and Industry. A cabinet with chased silver work in good taste (Koch & Bergfeld, Bremen) takes high rank in the transept. Three more German firms of Berlin, Hanau, and Lauter (Saxony) have exhibited gold and silver goods. They may be confidently compared with the best articles of other nations, although England, the United States, New South Wales, and South Australia compete not unsuccessfully. We also find in the transept a number of bells, frequently tolled, by C. Voss & Sohn, of Stettin. Besides Germany, England only has exhibited bells.

Inside the exhibition, Germany is the most musical country. In the principal hall are ranged more than seventy pianos of various descriptions, the best known makers being Blüthner & Bechstein. Berlin, Stuttgart, Munich, Dresden, Leipzig, Weimar, Coblenz, Vöhrenbach (Baden), Barmen, Zeitz (Saxony), Löbau (Saxony), Naumburg on the Saale, Saarbrücken, and Wesel participate in this show of pianos. England, France, Belgium, and the United States have also exhibited in this class, although not so many. Of those countries, America, with her Steinways, alone can compete with Germany. Besides a large number of other instruments, the public are shown the leather cylinders, resembling the jacquards of pattern weaving, in which the melodies of the barrel-organs are cut in. If desired, the instruments are opened, and the adult public stand before them like children who want to see what is inside.

On entering the large hall, a strange object in the shape of a Calvary strikes the eye, nothing at all similar being within the radius of the exhibition. Those altar saints have nothing in common with art; their claim to notice consists in the faithfulness with which the human body is portrayed. The amount of business done in this line is something surprising, and thus it happens that, while Italy is first in the lighter walks of high art, the Germans are at present the principal manufacturers of saints.

In porcelain, Franz Till, of Dresden, has exhibited paintings on porcelain and ivory, which may be compared with the best that are produced anywhere else. The painted china for domestic use of Römer & Födisch, of Fraureuth, is very good, and the same may be said of the fancy porcelain of Helena Wolfson, of Dresden. As striking as those objects may be, other countries furnish similar things. France has sent splendid faïence, Italy excellent majolicas; but the most magnificent collection, especially as regards quantity of exhibited china, is offered by W. Brownfield & Sons, Cobridge, Staffordshire. There we find mountains of plates, with paintings of real artistic merit, valued at 120*l.* the dozen.

There is a great diversity in German glass goods. Some of the glass is excellent; some of it is cheap and of an average description, only intended for sale. Amongst exhibitors of good glass may be mentioned the Stolberg Glassworks (near Aachen), and Fr. Klingspor, jun., of Siegen. Dr. Heinr. Oidtmann & Co., of Linnich, show glass prints on a new principle. Of countries exhibiting glass goods, England and Austria, besides Germany, are first. Austria has sent a quantity of saleable glass and china goods; of English exhibitors, Thomas Webb & Sons have filled a great part of the transept with their best manufactures. Bohemian glass, which, while scarce, had some claim, is so plentiful at Sydney, as it was last year at Paris, that it fails to please.

The exhibition of gold beading by Germany will probably obtain one or two prizes. Belgium does not approach it. English makers affirm that their gilding is better, but they have not exhibited anything that could be put to the test. Considering the material, the iron ornaments from the Lauchhammer Ironworks are gems, their excellence being the more obvious as it is not shadowed by similar work of other nations, barring the rounded bronze reliefs of the Belgians. We find knights' helmets and shields, adorned with reliefs, for the ancestral halls of newly-ennobled bankers, as well as furniture, knicknacks, decorative figures, partly the natural colour of iron, partly bronze. Among them towers the well-executed bronze bust of the German Emperor, one-and-a-half life-size.

Arms and cartridges of the newer and newest systems (we believe a pause has set in in the invention of "manslaying machines") are exhibited by half a dozen firms, amongst which the name of N. von Dreyse, of Sömmerda, is perhaps the best known. The country most prolific in deadly weapons is Belgium. There, in the gallery, is a crowd of revolvers and bayonets, of Remingtons, Sniders, and Chassepots. If Germany were to attempt in the manufacture of arms a contest with Belgium, she would have to make very great efforts.

The ironworks of S. C. Harkort & Co., of Duisburg, show, in the machinery hall, one of the best collections of the different parts, to the most minute, used in the construction of iron bridges, which is a special branch with the firm. The collection is in the form of a gigantic ornament, harmoniously arranged, enclosed by a framing of photographs, illustrating the history of bridge construction. The Americans have attempted similar displays, but they are beaten in the matter of tasteful arrangement.

Gloves and hats have been sent by all countries exhibiting. The best display of hats is by Christy & Co., of London.

In the great branches of the textile industry, Germany is not well represented, many of the best German firms being conspicuous by their absence. One of the best shows is that of J. G. Treffts & Sohn, of Leipsig, who exhibit cloth. Manufactured textile goods are also sent by England, France, Belgium, and the Australian colonies. In comparing the carpets shown by Germany with those of the best makers of the world,—amongst them John Crossley & Co., and Tapling & Co.,—an impartial judge would probably say that Germany excels in taste and suitable selection of patterns, England with respect to magnitude of operations. The beautiful "Gobelins" of the French, in which they are confessedly unique, must not be left unmentioned; in other respects, France has nothing very remarkable in this class. In lace and embroidery, Switzerland must be placed first.

Germany is great in clocks, sent from the Black Forest, Silesia, Baden, and Westphalia. There are some splendid clocks, inlaid with gold and enamel, exhibited by A. Türpe, of Dresden. They are in the taste of the last century. Respecting watches, it is stated that, although German watches are so often described as "Genevas," the 'cute Yankees know how to utilise the really excellent workmanship of German watch-works by putting them into very massive gold cases, and sending those watches into the market as American goods.

From want of space elsewhere, Germany has been obliged to make good use of her share of the gallery, which is otherwise much neglected by other countries. First, she makes a good show of material for instruction, scientific instruments, paper, and similar articles. At the entrance there are found parabolic reflectors, electric lamps, and telephones of the improved Bell system, of Siemens & Halske. Of similar objects in the English section, only some heliostats, as used in the South African and Afghan campaigns with some success, are shown. Other eminent German firms exhibit microscopes, telescopes, theodolites, surveying and mathematical instruments. In all those things, Germany is unrivalled; although the English, the French, and Americans are also far advanced in this branch, they have sent nothing worth a special notice. Some machinery models, used in illustrating the laws of mechanics, optics, and related branches, to the students at the Darmstadt Polytechnic School, form a unique collection. Many of the objects have already been purchased by the Sydney School of Arts.

The exhibition is very rich in sewing-machines; perhaps no other article is so well represented; Belgium, England, France, Germany, and the United States participating.

England almost monopolises the great branch of writing-paper. If we were to judge by the Paper Exhibition held last year in Berlin, it would appear as if with German paper a good business might be done in Australia. This may be true; but German descriptions of paper have a lower reputation than the English article; yet it is a fact that the English import their best papers,—for instance, a great part of their printing-paper,—from Germany. We know it for certain that the importation of German paper into England is continually assuming larger proportions.

There are three branches in which Germany is equally great, whether this assertion is applied to production or consumption; we refer to spirits, wine, and beer. Pure alcohol goes from Germany to all parts of the world, principally to fortify wines. France, England, and Holland take more to the manufacture of cordials and liqueurs; they are not absent in the German section, but pure alcohol, such as is made in the eastern provinces, preponderates. Light wines also form a special German feature. But beer

is perhaps stronger, and beer will be one of the most hotly contested fields. The rivalry is greatest between Austria and Germany, and next between England and Germany.

There are some things in which Germany is either conspicuous by absence or else supplies but little of merit. Amongst them are leather and leather goods (articles which form one of the strong points of England at the exhibition), products of the textile and iron industries, as well as artistic bronzes, terra cottas, &c. In the textile industry, whole branches are omitted; while in the iron industry larger machinery, steam-engines, locomotives, and similar objects are absent.

Of machinery proper, not much is to be seen. In instituting comparisons with other countries, it may be remarked that the Americans are prominent by many novel ideas. The gas-machines for the house, hardly larger than a safe, exhibited by England, are also remarkable objects. As regards agricultural tools and machinery, many of the German machines, it is asserted, go under an English name to England, and are equal to those made there. Those who doubt this statement are advised to go to Sydney. This account, though it is from the pen of a German writer, claims the merit of being fair; it has been the author's endeavour to keep it so, and to write without native prejudice.

MUSIC, AND AS HELPED BY ARCHITECTURE.

MUSIC may very fairly be said to occupy a special place in the long catalogue of things of interest artistically. It would seem, above other arts, to be all but universally interesting and more or less intelligible, and to be capable of entrancing and thoroughly occupying, at least for a time, all orders of minds and all degrees of intelligence. The learned and the unlearned, the wise and the simple, the most refined and the very roughest, all seem capable of being entranced by the magic of sweet sounds,—by music. In the sister arts of drawing and painting this can hardly be said to be so, and certainly it cannot be affirmed of architecture. Each one of these would seem to require, as preliminary, a somewhat of education, and special education in the beholder to enjoy their results. True it is that the most common intelligence will pause before the likeness of a well-known face, and will even return to it again and again; or a striking representation of a battle-scene, full of life and action, will command attention, and a long attention; but, speaking generally, we may safely affirm that of all the fine arts, the art of music is the most universally intelligible, pleasing, and attractive.

Thoughts such as these must certainly strike any one who reflects for a moment on the quantity of music of all and every kind which this great city alone is always day and night providing for the amusement and delight of its vast population. Indeed, there would seem to be hardly any end to it; another and a more grand opera-house being at this moment only waiting its time of completion, in addition to those already in existence. We need, too, only name the numberless music-halls, great and small, and other minor places, in which, though not solely devoted to music, it plays so prominent and conspicuous a part. We here say nothing of cathedrals and churches, though music, as all know, takes an important place in the ministrations of them. Music is thus everywhere, and all around us. Generally we may thus take note of all things musical; but to fully take note of, and to understand the subject of music as an element of public delight and amusement,—and may we not say instruction?—it would be necessary to go into not a little detail, and specify the many forms into which it divides itself, and the many tastes and degrees of culture it appeals to. Popular musical displays may also be fairly said to be a test, at least of a certain kind, of the power and influence of "education," using that word in its most comprehensive sense; for the sense of hearing must needs, as others, be educated to do its own work as well as may be.

There is in music one element which makes it an art especially *per se*,—it is that of its calling upon the twofold faculty of composition and execution. There must almost always be a subject to play, and an executive player or players to do the work of it, and such are but very rarely the same; the composer and the player are quite distinct, in a most wonderful way sometimes. Again, the composer's work lives, and is interpreted over and over again, and even re-interpreted, long after he himself has passed away, no longer to compose or to listen. Though dead, the Beethovens, Mozarts, Mendelssohns, Handels, and the host of thinkers in sound, yet continue day by day to speak to and to charm the world, not silently as a book, or a poem, or a picture, but through the organs and the hands of others not less in their own way gifted than themselves.

We must not here forget, by the way, how very much depends on the instrumental means, on the musical instrument, as a piece of mechanism that is employed in the interpretation of the musical idea, whatever it may be: a subject in itself on which much might be written, and usefully too, in these days. All and every mechanical appliance is ever improving and progressing, as we are on all hands told; but might we not ask, with some curiosity, Are musical instruments doing so? It may be of interest also to note here, that in the performance of "Fidelio" at Covent Garden, the old-fashioned and now disused serpent, as it was called, has to be brought into life and service again, no substitute for it seeming possible. It is a singular instrument, and does its special work well. It would seem to be quite possible to improve even a good thing out of useful and serviceable existence.

Passing by not a few items here on which much might be said, we may come to the more strictly educational part of our subject, and may ask, usefully may be, what sort of music it is that finds acceptance with the "popular mind," to adopt a very general term, and how far education has an effect on it, and how far it, in its turn, educates those who listen to it? Music holds so special and peculiar a place in art that it needs a special faculty of observation. There are those who will listen with delight to street music, who will hardly pause to look at the finest of pictures. Yet are such not more educated for the one amusement than the other. May be there is more of the poetry of human nature to be roused and got at through the ear than through the eye, the eye needing more of culture than the ear. Crowds will be found to gather round but a common instrument poorly played, and to remain while nought else will hold them together. May not this be said to evidence the "power of sound," and to prove how deeply it touches and must needs educate and refine, if that word be sufficiently definite, the very roughest and the most untutored? Is music, pure and high-wrought music, we might here ask, sufficiently utilised? In the now universal educational programme there is most surely a fair opening for such new educational appliance.

It may here serve to guide to further consideration of the nature of this inquiry, and to the nature of the subject generally, to ask how it is that in so vast a city as London, there is no building erected for, and devoted exclusively to, music, and especially adapted for it in all ways, not only as to dimensions and form, but as to the nature of the materials. Surely this would be well worth a little careful experimenting. Glass, surely, cannot be the best of substances for it. For classical music, as it is termed, how little has been done, as far as "building" is concerned! What building is there adapted for the perfect rendering of the great "symphonies" of the masters of musical fine art, or for the hearing of those wonderful fancies which would all but seem to be inherent in the very being of a musician and composer, *e.g.* Gounod's "Meditation"? Such things never tire. But as matters now are, the hearing of them is an event in life, and a something hardly to be hoped for again. Surely a fine structure wholly fitted for this purpose, and for this alone, would in the end pay? It ought to do so!

It is quite true that the faculty of finding out what is most worthy is not to be acquired in an hour or a day, but it is to be done; and if there be within the educational programme a thing worth aiming at and striving for, it is this of knowing a fine work when present. The consequences can here, at least, be hardly overestimated. It may, indeed, be a question, how best to provide for such; but the best and shortest road to it is to really and earnestly need it. Culture,—at least, musical culture,—does not, we are told, consist in the increase, however much, of knowledge, but in the wise and right use of that knowledge and faculty we have: an admirable definition, and one that here ought to do good service; for, in the feverish search after the "new," the old and the well tried are but too apt to be forgotten. Music is ever new, however old may be the dates of the birth and death of the composer of it; for it is always new as interpreted afresh. In a building all ways adapted for it, both as to form and materials, it remains yet to be still more new, and to come on to the world as a fresh creation. There can surely be no doubt that one of the great problems of the future (if it be not of the present) will be this of the due and worthy interpretation of music; and that this must involve, among much else may be, the special plan and construction and material of the building in which it is to be heard.

We have thus called a moment's attention to music and to matters musical, and as connected with building and architecture, feeling how much there is yet to be thought out and to be done in it. The art of architecture owes a something, it is quite certain, to music as an art, and a fine art; for it may well be doubted whether our great cathedrals themselves would have come into existence had not music and song and chant been to be provided for. It is most certainly a great architectural, and may be even constructive, problem for the future, how best to build and fit a building suitable in all ways for music in its highest and purest form, where best to put the performers, whether few or many in number, what materials to use, and what kinds of fittings are best and most suitable. The power of sound is but too subtle. Much might be said on it; but very much more after due inquiry and careful experiment. So small a difference, indeed, changes its character, that the painting the walls and piers of a great cathedral does no small mischief, as was evidenced in St. Paul's when so unhappily painted, and which may now be more happily tested in it as it now is; as also in Westminster. It will surely be a notable thing to accomplish, in these modern days, rivalling truly the great art feats of the past. We must needs do this work ourselves, for neither Egypt, nor Greece, nor Rome, nor Gothic Europe, can here help, for they *had* nothing of it.

FROM THE BANKS OF THE SEINE.

PARIS for the last fortnight has presented an aspect unknown even to the oldest inhabitants; the frozen banks of the Seine, in their sad immobility, offer little of that sprightly liveliness which generally reigns on the quays of the river. For the fifth time only during this century, so meteorologists tell us, has this phenomenon occurred. The municipality at this trying period deserve the highest honour for the measures they have taken, and the ready employment they have afforded, to the thousands thrown out of work. At every great square, picturesque groups of uncouthly-clothed labourers, each spade or pick in hand or over shoulder, form at certain hours in the day, and are engaged and paid, and already the great thoroughfares, by the aid of thousands of carts,—in great part generously horsed by the General Omnibus Company, who have also displayed in these bitter circumstances praiseworthy liberality,—have been cleared of their tons upon tons of heaped-up frozen snow. The work of charity has not stopped here: 4,000*l.* have been voted by the municipality to enable the poor to gratuitously take their blankets out of pawn, and a few days later more than half that sum was expended to allow the needy to come again into possession of their mattresses. Warmth has been publicly and gratuitously afforded by huge coke braziers established on most of the public squares, a happy introduction from St. Petersburg, and round the grateful warmth may be seen at all hours large groups of men and women. Private charity has been no less active. Food and warmth,—that second greatest necessity in winter,—has been afforded, as also comfortable beds, to a large number of men and women. Within a few days past an excellent innovation has been introduced by warming comfortably, and throwing open freely to the public, the huge consultation-rooms of the great hospitals. Such winters as these should, and do, rouse the attention of the thoughtful in the direction of the possibility of more ample provision being made in the certain event of such trials recurring. Science and its sister Hygiene have evidently

not yet said in this matter their last word, and aided by that boundless generosity and charity which are ever to be met with when suffering humanity is to be succoured, the near future, we may be assured, reserves for the world unsuspected methods of alleviating public misery.

The due consideration of the hygienic condition of our great cities must be regarded as one of the chief questions which will occupy the legislators of that near future,—a future which may be said to have already commenced. As our great centres attract in larger proportions their thousands from the country, as the laws which regulate the growth of population exercise their unvarying influence, and as, at the same time, the desire of the Legislature increases, to afford to these millions a degree of hygienic comfort more or less approaching perfection, each day this important question presents itself as one of those most needing immediate consideration, and requiring a more active supervision on the part of the Government. It is a proposal which has more than once been unsuccessfully put forward, but which cannot fail in time to be carried out, that of the formation of a special Ministry of Hygiene. Those who live in the great centres, but more especially those residing in the capitals, have their attention too often painfully drawn to the consideration of such subjects to which it is one of the noblest sources of pride of modern progress to have first drawn scientific attention.

The population of Paris, in 1878, numbered hard upon two millions of souls. With Paris thus placed on the first rank among the great cities of the world, it is not uninteresting to observe its hygienic conditions as proved by its death-rate, the most important, when its correctness can be depended on, among means of acquiring a definite understanding on this point. The mortality of the French metropolis is some 24·6 for every 1,000 inhabitants, this mean being taken during the period between the years 1874 and 1878. But as such facts, while to a great extent proving more or less satisfactorily the hygienic conditions of a city, require comparison with like statistics of other large agglomerations of humanity, we take the bills of mortality of last year, and find Philadelphia offering the most satisfactory sanitary conditions as judged in this manner. William Penn's colony on the banks of the Delaware stands first on the list of the great cities of the world from this point of view, the death-rate being reduced to eighteen persons in every 1,000; our own capital on the banks of the Thames follows with 22·8 for every 1,000 inhabitants; after which comes Paris, which, as above remarked, is 24·6 for the same proportion; then follow New York, 24·8; Brussels, 28·0; Rouen, 29·8; Berlin, 29·9; Calcutta, 37·7; and the last of all, St. Petersburg, with 47·1. The place occupied on this scale by Paris, in common with more than one other of the cities mentioned, cannot be said to be definite. Each year the French metropolis ameliorates its hygienic conditions, and distributes more freely to its occupants those two great necessities of existence,—light and air,—while pure water is more abundantly supplied, and impurities are carried away. The municipality and the hygienists have expressed it as a possibility for Paris to reduce its death-rate to the low figure of seventeen in every 1,000 inhabitants. Contemporary science may with great justice attribute the reduction of the death-rate within this century, not alone to the salubrity of the air of Paris, but to the greatly ameliorated distribution of the streets, to the piercing of new boulevards, the planting of immense numbers of trees, and the opening up of numerous squares and public gardens, but especially to the hygienic consideration given to the supply of water to the capital. We learn from a scientific contemporary, the *Journal d'Hygiène*, that fifty years ago, in 1829, Paris was able to furnish only five litres (little more than one gallon) of pure water for each inhabitant daily. In 1879 it is nearly forty gallons of pure water for each inhabitant. The city draws its provision of water from the Seine, the Ourcq, and the Marne, which furnish it a daily volume of nearly 370,000 cubic yards, with the other reservoirs supplied from Arcueil and the Dhuis, the artesian wells of Passy and Grenelle, and the waters of the Vanne, the total daily supply of water to the French capital may be estimated at 415,000 cubic mètres, or nearly 543,000 cubic yards. This supply is brought into the capital by a series of pipes which, put together in a line, would attain the length of nearly 3,000 miles. From the five litres of water in 1829, to the 150 in 1879, a progress is evident, but still the amount is insufficient.

As one of the natural consequences of the snow and the frost here, all building operations have received a check in the metropolis, and the bricklayers and masons are leaving Paris, for most of them come from the provinces. A few days since the Orleans terminus here was crowded with a first squad of some 300 Limousins returning home as usual after their season's work; they are now being followed by other and even more numerous bands, laden each with their simple but heavy tools, and their small package of clothes. The Limousins return to their homes and families with their pockets well filled, for they have had a good season, and they are a thrifty, honest, sober set of workmen, each with his little square of field carefully cultivated, and many with money in the Funds.

To aid the unemployed in this bitter winter weather, the Minister of Public Works has recently published a circular addressed to all the heads of the Government work-yards throughout France, and urging them to "redouble their efforts and seek every possible combination which may allow of work being given to the unoccupied."

While we are speaking of the consideration given to the occupation of the working-classes, it may not be out of place to mention the result of the Commission nominated not long since to inquire into the means adopted by the contractors to prevent loss of life and accidents in the employment of scaffoldings. The use of nets, which was suggested, and in more than one case, to our personal knowledge, adopted with eminent success, has been set aside by the Commission by reason of the difficulties, which it is only right to say certainly exist, in these nets being fixed in the streets of a large capital like Paris. The kindness of neighbours has to be put under requisition to fasten such nets, and this is an inconvenience. The measures proposed by the Commission consist in the law obliging a greater solidity and strength in the scaffolding employed, and the obligatory institution of a balustrade on each side and at each landing of the scaffolding; and for flying scaffolds (such as are often used here in Paris, where, worse still, one constantly sees a man suspended from the top of a house on a single knotted cord), the use of three ropes instead of two. This question of scaffolding, and the natural unwillingness of the contractor, on the score of its great expense, to erect a secure structure when the house has merely to be painted or washed, is one that requires a more serious examination than that given to it so far. At Brussels, as every professional visitor must have noticed, in each house, exactly under the cornice, may be observed a line of several holes in the wall; into each of these holes when the house requires repairing is thrust a stout pole; on this are suspended either a number of cords, or the upright poles are attached. In this manner, in an incredibly short space of time, and at the smallest possible expenditure, a secure temporary scaffolding is obtained and as easily removed; the hole being pierced in the wall of the garret, there is no lost space or injury done to the house, while an architectural beauty is added to the cornice.

This system of scaffolding, of which personal acquaintance enables us to know the value and efficacy, suggests to us the proposal recently put forward by a French professional journal, *L'Architecte*, that there should be instituted here in Paris a permanent exhibition of materials and inventions connected with the building trade. The success of the recent exhibition of sciences applied to industry, in which a special annexe was occupied in this manner, has suggested this proposal. "Each manufacturer," we quote our contemporary, "would have in this exhibition a specimen of his productions; a jury would be nominated by the exhibitors themselves, and each year prizes and recompenses would be awarded to the most praiseworthy inventions." The proposal further contains the suggestion of a special room devoted to "new inventions"; each invention, discovery, or improvement in the processes of building, and its various aids and accessories would be here represented, and would have the right to remain here six months or, at the outside, a year. Such a proposal merits attention, and we may venture to hope that such an institution would soon cross the Channel. In these days of museums, and with the manifest proofs about us of their salutary effects, a similar institution, as an annexe to the Parkes Museum of Hygiene, could not fail to become a powerful ally in the aims of its founder.

Among the artistic topics which deserve mention from the banks of the Seine, we may refer to three important competitions held at the École des Beaux Arts, that for the Chandesaigues prize, for young architects; that for a monument to be erected at Courbevoie in memory of the defence of Paris in the Franco-German war; and, more recently, the competition for a Sèvres vase to commemorate the "passage of Venus across the Sun's face." To speak at length of such artistic tilts, to those at a distance, is scarcely profitable: in all the works exhibited is evident that peculiar French stamp which some cynically attribute to the over-active interference of the State in French artistic education. Let us not forget to mention also that M. Delaunay has been nominated a member of the French Academy of Fine Arts in the place of the late lamented Alexandre Hesse, whose name and works are now almost forgotten by the present generation.

SCULPTURES OF ANCIENT PERGAMOS.

In the course of the past autumn, the Old Museum at Berlin has been enriched by an ancient work of art of unique character and value, a very extensive series of high reliefs from the site of the ancient city whose name is variously spelt in Greek and Latin authors, appearing in the latter chiefly as Pergamus, but in the former as Pergamos, Pergamon, and sometimes Pergama. It was at noon on the 26th ult. that a numerous assembly of the *savans*, classical scholars, journalists, and artists of Berlin met in the Göttersaal on the basement of the Royal Museum, by special invitation of the Prussian Minister of Education, for the first preliminary inspection of these valuable relics of antiquity. It is not possible to enter as yet into any detailed criticism of the work, the more so as a large portion of the sculptures is still invisible, and some time must elapse before they are freed from the mortar and other accretions still covering them,—a process through which they are now going, and which it is intended to complete before opening the collection to the public generally. At the private view to which we have above referred, the unanimous verdict was that these sculptures are of the rarest value, and that by this addition to its treasures the Berlin Museum has received an accession, second in importance and interest to no ancient remains which have, for a long time past, been deposited in the museums of Europe. With respect to the extent of the collection, some idea may be gathered from the fact that they fill two very long galleries, and, that, in addition to the sides, they, in many places, cover the floors of those apartments. The art-loving public of Europe is indebted for the recovery of these remains to the exertions of Herr Humann, a German civil engineer, long resident at Smyrna, and, next to him, to Herr Conze, director of the Berlin Museum. To those two gentlemen is due the discovery of the relics and their subsequent excavation and preservation. In their acquisition for the Berlin Museum, the German Foreign Office lent its powerful aid, the German Ambassador at Constantinople having materially contributed to the success of the negotiations, and to the fact that the money they have cost is exceedingly trifling. It is intended after the cleansing of the remains to put them together in their original order, and to place them permanently on exhibition in the projected Berlin Museum for plaster-of-Paris casts. In the mean time we are enabled to give the following description which we translate from a copy of the MS. of the catalogue about to be published on the subject, and which will place our readers in possession of all the leading facts at present made out with reference to these remarkable sculptures:—

"On the Acropolis of ancient Pergamon (now Bergama) fragments of high reliefs for many years past have from time to time been brought to light, as mentioned by Curtius in his 'Contributions to the History and Topography of Asia Minor' (pp. 56-62). Several of these remains, through the courtesy of the civil engineer, Herr Karl Humann, of Smyrna, have been presented to the Royal Berlin Museum, and are placed in the Göttersaal, or hall of the gods. Last year, at the suggestion of Director Conze, the permission of the Sublime Porte was obtained to excavate the spot in question, and

the excavations were commenced under the direction of Herr Humann, a grant having been made for the purpose under the auspices of the Prussian Minister of Education and Worship. In a very short time the work led to the discovery of a series of alto-relievo tablets, which turned out to be parts of a large marble frieze, to which the fragments already in Berlin likewise belonged. The German Emperor was now pleased to grant the requisite funds for systematically carrying out the excavations for which the ordinary means at the disposal of the Royal Museum would have been insufficient. The operations, in which the German Crown Prince, the patron of the Royal Museum, manifested deep interest, were then continued, under the direction of Herr Humann, and for part of the time also of Director Conze, who is still on the spot, and who will soon bring the operations to a conclusion. Through the courtesy of the Sublime Porte, Germany has been enabled to secure possession for the Royal Museum of all the relics that may be found. The largest part of the sculptures has already reached Berlin.

In his 'Liber Memorialis' (viii. 14), written, probably, in the second half of the second century after Christ, Ampelius enumerates as among the wonders of the world, a great altar situated at Pergamon. It was 40 ft. in height, and was covered with extensive sculptures, representing the Battle of the Giants. It was manifestly the same altar which was mentioned by Pausanias, writing at about the same period (v. 13, 8; compare Brunn Bull. dell' Inst., 1872, pp. 26 *seq.*). It is an obvious conjecture that the structure was erected by Attalus I., between 241 B.C. and 197 B.C., and that it had some connexion with his victories over the Galatians. There is no doubt that the great mass of the sculptures which have been found belong to this altar, and more particularly to a great frieze forming part of it, and representing the battle between the gods and the giants.

The question is still under investigation as to what was the general shape and aspect of the altar, and what place the frieze occupied in it. The frieze itself consisted of tablets 2·3 mètres in height, and with a breadth varying from 0·61 to 1·10 mètres. They were made of a large-grained marble, the colour of which was not quite uniform, sometimes being bluish and sometimes rather yellowish. The figures, executed in the boldest high relief, being often entirely separated from the background, occupy the entire height of the tablets, and are, therefore, about one-and-a-half times life-size. The composition exhibits the gods engaged in the fiercest and most passionate fight with the giants, who are represented in the most fantastic variety of form. The latter are for the most part serpent-footed, often winged. Sometimes they appear in purely human shape as armed warriors. They are all rushing on in the wild and savage rage of battle against the gods. Two of the chief groups, apparently designed as counterparts, comprising four tablets each, represent in the one case Zeus, or Jupiter brandishing the ægis in his left hand, and as having just hurled his thunderbolts with his right hand; and, in the other case, Athene, or Minerva seizing by the hair of the head a giant about whom her serpent is coiling itself, while Nike, or Victory, is hovering near to crown her as victress; and Ge, or Earth, is rising up out of the ground to complain and to supplicate for her sons. Upon another series of tablets, Helios, or the Sun, is represented rising up from the deep in his chariot drawn by four steeds. On other tablets we find Apollo, Artemis, Dionysos accompanied by a satyr-boy, Hephaistos, Boreas, and, it is thought, Poseidon (Neptune). On a beam, running along above the frieze, the names of the gods appear to have been engraved, and below the frieze the names of the giants.

While the entire composition obviously comes from one master, and everywhere shows the same freshness and the like wealth of inventive power, the manner in which the different parts are executed is not completely uniform, but betrays different hands of various degrees of skill and carefulness. But throughout the whole we see an incomparable mastery and boldness in the marble work. Although the sculptures manifest their relationship with the works hitherto known as products of Pergamenian art, as, for instance, the Dying Gaul of the Capitol, and the group of the Gaul who has killed his wife and is stabbing himself, in the Villa Ludovici, yet they present this style of art from entirely new points of view, and they open up a very surprising insight into a branch of ancient sculpture which is remarkably in sympathy with modern ideas, and which hitherto was little known to us. The surprising relationship of some of the subjects with the Laocoön group throws a new light upon the question not yet answered with certainty, as to the period when this work originated.

The number of plates found, some of them of the full original height, and others in large fragments, is upwards of ninety. To these there are to be added no fewer than 1,500 smaller fragments, some of them being very small indeed. The surface of the relics is in very different degrees of preservation. Some pieces are as good as intact. There are great hopes that the plates which had been built into walls of Mediæval fortifications will, after the removal of the mortar still on them, turn out especially well preserved. A great deal has been much damaged by exposure to atmospheric influences, and a great deal probably by fire; and it is beyond doubt that a considerable portion of the frieze has been entirely destroyed, probably by having been burnt for lime. Along with the Gigantomachia, numerous fragments of a second frieze of smaller dimensions (1·57 mètres in height), and of less deep relief, have been found. The subject of this is not yet made out, but part of it appears to refer to the myth of Telephos. A series of statues has also been found, some at least of which belonged to the altar-piece. Of sculptures of a more ancient epoch only a few isolated pieces have been obtained, among which is an ideal female head, of quite extraordinary beauty."

COSTUME, CUSTOMS, AND DISEASES OF BUILDING WORKMEN.

IT was once very easy at first sight for an ordinary observer to recognise the building or other skilled workman by his everyday-costume or working-dress, but it has for some years past become more and more difficult to identify one class of workmen from another, except when witnessed at their work, or found in the street bearing or carrying some instrument of their respective crafts. So completely have skilled artisans thrown off the once distinctive signs of their ancient callings in apparel and other observances, that it takes one acquainted with their trades, habits, and manners to identify them with any certainty. Building and other artisans have most foolishly cast aside some sensible customs and habits which they would do well to revive wholly, or subject to modifications. The mason, carpenter, joiner, bricklayer, plasterer, painter, and those in other branches wore once distinctive caps and aprons, and their working-clothes varied, particularly in trousers and vests. Carpenters, masons, and bricklayers wore either fustian, baracan, moleskin, or corduroy trousers, or some other kindred stuff, and for the protection of their working-dress and other useful ends they also wore an apron. The carpenter's or joiner's apron was made of stout linen, generally white, but often it was made of unbleached stuff at first, which afterwards thickened and became white by repeated washings. The full-sized apron of the joiner or cabinetmaker was made to cover the breast as well as to extend to the knees, or below them, and there was a pocket sufficient to hold a small number of nails, and a few tools, such as bradawls, gimlets, and other minor and useful tools in constant request by the workman, or wanted when executing or fixing a piece of work in an elevated position. There was a rule-pocket also in some aprons, as well as the general one in the trousers. Three-feet rules in 9-in. joints or lengths, or 2-ft. rules in 12-in. lengths were mostly used by the old class of operatives, but our present-day artisans have almost discarded deep rule-pockets in aprons or trousers, and prefer using 2-ft. rules in 6-in. joints, as they are more handily carried, and can be hidden away in any pocket out of sight. Less error, however, is likely to occur in the use of rules with the longer lengths and the less joints; but your modern building workman is a gentleman, and he likes compactness, and does not care to exhibit any of the signs of his trade outside the workshop or building. We do not infer that all workmen are ashamed of their craft, but we regret to write that too many of our present-day artisans act in a manner as if they wished that nobody should recognise that they were mechanics. The brown-paper cap, the moleskin or corduroy trousers, with a rule-pocket from which a portion of the rule stood out, and the apron, were the distinctive dress of the carpenter, joiner, and other wood-workers. Masons and bricklayers formerly wore coarser aprons than carpenters or joiners, and the material was often or commonly a description of leather. Masons and stoneworkers of all kinds to some extent still wear leather aprons as a protection for their clothes, for the wear and tear, dust and colouring matter of some stone acts most injuriously on clothes, and an apron of some kind should be always worn. Workmen should never be ashamed of their garbs; and as for an apron, it spells cleanliness and economy in the yearly cost of clothing.

Shakspeare, who has touched upon almost everything, gives the carpenter a leather apron; but the traditions of the building trades do not associate the house carpenter and joiner with the donning of a leather apron, although it is just possible in early times carpenters, like smiths and masons, wore aprons made of leather, as wheelwrights and millwrights in our own times, or those engaged in cart-making and farming carpentry. Here is what Shakspeare says, in "Julius Cæsar," act i., scene 1, the scene supposed being a street in Rome:—

Flav. Hence: home, you idle creatures, get you home!
Is this a holiday? What! know you not,
Being mechanical, you ought not walk,
Upon a labouring day, without the sign
Of your profession?—Speak, what trade art thou?
1 *Cit.* Why, sir, a carpenter.
Mar. Where is thy leather apron, and thy rule?
What dost thou with thy best apparel on?—
You, sir, what trade are you?
2 *Cit.* Truly, sir, in respect of a fine workman, I am but, as you would say, a cobbler.

There is little doubt that the shoemaker, when at home in his workshop, wore what his present-day representative wears,—a leather apron; but your present-day carpenter or joiner would spurn the idea, and often prefer to soil and wear out his clothes than to even wear a short white apron, from the waist to the knees. The plasterer sometimes wears a white or grey apron, and in some instances a white or grey blouse; and the house-painter who is wise dons a blouse and canvas trousers, or overalls, when engaged at his work. The painter being constantly in contact with painted work, and handling all kinds and colours of paint, oils, varnish, &c., runs more danger of permanently injuring his clothes than wood or stone workers. All building workmen, however, are more or less liable to injure their clothing by contact with various materials, and the wearing of an apron is advisable, and should be thought indispensable. Working-clothes, at the same time, should be somewhat strong and coarse, yet close or thick in material, and the colours should be such as will not show the dust or dirt, or but little of it.

The French building *ouvrier* or operative is more wise in his generation than his British brother, for he mostly wears over his working suit a blue blouse. In London, the only building workman who approaches the Paris one in costume, though not in colour, is the house-painter, with his white blouse or overall. There are at the same time hundreds of painters and sign-painters, writers, &c., who work away daily at their trade in their ordinary dress, their working-suit being their daily walking-suit, and the same may be written of other building workmen, and many outside the trade.

On the score of health and cleanliness, we would strongly advise all classes of building and other workmen to retain the use of the apron, and in some instances the blouse. It is immaterial whether the old paper-cap be retained, though it is very suitable for the workshop. Caps can be had of suitable material for working uses, and straw hats are a healthy and light covering for the summer-time. There are a number of artisan diseases from which workmen suffer, and some hands in the building branches are prone to contract and suffer from those diseases. Stone, monumental, and marble masons suffer from the mechanical irritants, as dust given off from the stone they work, just as coal-miners, knife-grinders, flax-dressers, and other workmen suffer. Many diseases could be prevented if workmen would only take a little trouble. As wearing aprons prevents a good deal of dust and dirt working through the openings of the clothes to the body, soiling the skin, and impeding the proper functions of the pores, so would the wearing of respirators by stonemasons and metal-workers, or other artisans, prevent them from inhaling dust. This constant inhalation on the part of a number of our artisans in various trades is the fruitful source of diseases of the bronchial tubes, lungs,

chest, and pulmonary consumption. Some useful respirators, as masks, were introduced a few years ago for the benefit of workmen, but few could be got to use them, or continue the life-prolonging practice. The moustache movement, advocated successfully in these pages a quarter of a century ago or upwards in the interest of stone and metal workers, and others employed at dusty trades, has had good results, a large number of workmen having taken to the wearing of moustaches on their upper and lower lips, and long beards as well. The hair to some extent acts as a filter and respirator, and workmen inhale less dust and other irritants. We have known several stonemasons to severely suffer from one or another of the diseases above named, and die at an early age. Cabinet and chair makers are also prone to these diseases, as they inhale much of the very irritant dust thrown off in the planing, scraping, and glass-papering of mahogany, rosewood, and other fancy and highly odourous or strong-smelling woods. House-painters often suffer from lead-poisoning, which cleanliness and nightly washing or bathing would lessen. Plumbers also suffer from lead-poisoning, and so do printers or compositors. Painters and plumbers, however, who wash their hands before meal-times, change their clothing as frequently as they can, and retire to bed in a cleanly state, seldom or never suffer from lead-poisoning. The term "painters' colic" has been long known, but that called "writers' palsy" is not so generally known. The attack of spasmodic irritability is sometimes so severe, in the case of the last-named disease, as to compel the sufferer to relinquish his trade or otherwise learn to write with his left hand. Writers' palsy, or paralysis, arises through the constant use of a particular group of muscles of the fore-arm. Being forced to work in a constrained posture, or to keep the arms or legs in a constrained posture, gives rise to many complaints in other than the building trades. Hence arises injured lungs to the shoemaker by the pressure of the last against his breast; but besides compressed chests, many boys or young workmen contract curved spines and distorted shoulders. As regards shoemaking, within recent years, there has been a great reform in the method of working in all the large workshops or factories, the trade being subdivided into several branches, and most of the work being done in a standing position, with the aid of machines and other improved appliances. The standing position is also of late being introduced into other trades, where sitting and working in a constrained position were productive of injury and disease.

During an ordinary working life, house-joiners and plasterers, particularly those workmen engaged in jobbing work and alterations, eat or swallow more than one good peck of dust. Indeed, this class of hands inhale, through mouth and nostrils, nearly as much dust as masons. Bricklayers, on outside work of buildings, inhale less dust than those engaged on inside work do. They are generally surrounded by a current of air which disperses the dust. Dusty trades, whether in relation to the working of stone or metals, have the effect of inducing drinking habits on the part of the workmen engaged, for the inhaling of dust causes thirst, and thirst too often, unfortunately, leads to the washing down of the dust with draughts of beer, instead of a rinsing of the mouth, and a draught of water or some other non-intoxicating liquor. Lime-burners, and some workmen engaged in certain chemical and vitriol work manufactories, wear the proverbial "wad" or wisp of straw or hay in their mouths, through which they inhale the life-sustaining air, and escape much of the poisonous gases or other irritants escaping or floating around them. It is a noteworthy fact that, notwithstanding the nuisances created by certain chemical and gas works through smoke, smells, and most disagreeable exhalations, there is a certain curative and preventive value in their existence, viewed in relation to some diseases.

We have known localities in which some vitriol and other chemical works were situated to almost wholly escape various visitations of cholera, fever, and small-pox epidemics, while the rest of the district, city, or town suffered severely on each occasion; and what makes the matter more remarkable still, the site of these chemical and vitriol works was previously swampy low ground, foreshores, slob-lands, mouths and sides of rivers and estuaries, reclaimed and filled up. It is a well-known fact, that notwithstanding the injurious effect that working in gasworks has upon a portion of the workmen engaged, yet, that in case of children and adults who have the whooping-cough or other kindred complaint, a temporary detention or visit or two of the sufferer to the yards or premises of gasworks often works a speedy cure, or otherwise so controls or lessens the cough that it passes away in a very short time. We leave these facts to medical men to explain as best they can. Constant inhalation of poisonous gases, however little, produces disease, if not death, while a temporary inhalation of a certain vapour or fume may act as a curative or preventive to some forms of disease.

Hale and healthy artisans in the building, or, indeed, in other trades in our crowded cities and towns, able to do a good day's labour at the age of sixty or upwards, are comparatively few in number at the present time. In our long experience of the building trades we have known carpenters, masons, and others who continued to work as journeymen till they had become octogenarians. We have known several less aged, yet men who had passed into their seventieth year, who could keep pace, and often outstrip, young workmen of twenty-five or thirty. Personal neglect and strong drink, we fear, have undermined the constitutions of a large number of our building workmen; and, as a class, in our large cities and towns at least, they are not as healthy and as long-lived as their predecessors. To the decline of the apprenticeship system a few marked ills are owing, which we will not stop at present to particularise, as they are obvious to the majority of the readers we address. Cleanliness in person and clothing and in thought and expression, and physical strength and mental activity, bring many advantages in their train. Health and skill are the workman's capital, and the latter is of little use without the other.

THE SALIENT FEATURES OF PARISIAN ARCHITECTURE.

The lively interest felt in Parisian architecture is so general and so legitimate that a further exposition of the subject will hardly need an apology. We shall endeavour, though, to invest our theme with that special value which springs from practical acquaintance with it: a circumstance which, we hope, will afford us an apology, and will kindly ensure us attention. Most of the comments made upon the architecture of Paris have too general and vague a character; or they are confined to the investigation of some special point. Hence their usefulness is limited to giving information on disconnected features, or to the propagation of a general favourable opinion about the merits of Parisian art. A comprehensive picture in salient traits, descriptive as well as analytical, will, no doubt, facilitate a clearer understanding of the subject, and will contain the elements of real usefulness and adaptability. Detail studies will, therefore, be no part of our present remarks; for we shall attempt to present the important causes which have given to Parisian architecture its distinctive character: those agencies which have prepared the *field* for the development, as well as for the exercise, of taste and skill in design and detail. The secret of the beauty which is so lavishly displayed from the Place de la Bastille to Passy, from the Mont Parnasse to the Gare du Nord, is, in its essence, twofold. On one side we have the French artistic talent, renowned since centuries, trained in excellent schools, fostered by many social institutions and by the art-enthusiasm of the whole people. On the other side we have those important causes which are the subject of our discussion, and which we have designated as the "field of action," or as the stage, upon which the above capacities are called upon to display themselves. Whether the French architects, divining what is necessary for effective street-architecture, have themselves first established their field of action, or whether the latter has been the result of outside influence favourably reacting upon the skill of the architects, is a nice question for art-historical speculation. The likelihood is, that both conditions have been co-existing since ancient times, and have worked hand-in-hand as they do at the present time. But, however that may be, it is certain that both conditions are necessary for architectural effort to culminate in works of perfection.

We repeat that, apart from matters of capacity and taste, a few great principles have contributed to the general excellence of Parisian architecture, and, in ascertaining them, we shall see that they are at once those which have at all times been accepted as necessary conditions to good street-architecture. We enumerate them as follows:—

1st. General extent of buildings and the roof.
2nd. The doorway and continuation of architectural effect from the street into the building.
3rd. The window.

I. *General Extent, and the Roof.*

The absolute size of buildings is an all-important consideration. There is power, monumental grandeur, breadth of treatment, and character contained therein. Where the canvas stretched before the architectural artist is large, he will feel a sense of liberty to let his genius fly; he will make his dispositions and determine his proportions with freedom, and according to æsthetic dictates; various solutions for façades and internal arrangements being possible, he will be able to arrive at a happy combination. Large and decisive features of design will be possible, reducing long and high façades into a few distinct but harmonising figures; and light and shade and colour effects can be so distributed as to be both effective in themselves, as well as contributory to the general design. Size of building gives breadth of treatment and *character*; these two go hand in hand, for they mean the frequent repetition (character) of a few well-designed features. Details, if good, are effective in themselves; but their individual worth and import to the general design is increased in proportion to the frequency of their occurrence. Thus, the regular rotation of a well-chosen detail becomes indeed a feature, impressing upon a building a certain character, and furnishing at the same time a desirable perspective scale.

In Paris, the general extent of buildings in front, depth, and height is large. Leaving out of account public buildings, hotels, and extensive business premises, the above is principally due to the general custom, for rich and poor, to live in apartments or flats. For such buildings, large plots are found most suitable and most profitable. This plan of dwelling, which existed in Paris in a more or less perfect form since olden times, received fresh impulse and full sway in the reign of Napoleon III. Desirous of making of his Paris the most beautiful capital of Europe, he set about his purpose with all the means and skill at his command, and on a scale almost unprecedented in the history of architecture. The city was partially re-planned; whole quarters were disturbed and rebuilt with the view of obtaining fine broad streets, improved communication, sites for proposed public structures, open squares, and gardens. As a glance at the map of Paris will show, the radiating system was employed, converging often as many as a dozen streets and avenues, towards a common centre, formed by an open square. Distinguished by a fountain or monument of some kind, these grand public places became the culminating points of architectural and perspective effect. It was clearly understood that new Paris had to be laid out in large plots, so as to have large buildings; for such alone could realise the intended picture of grandeur and magnificence. Hence, apartment-houses, already popular, became also the official plan, and under the scheming and organising genius of Baron Haussmann and an army of able and disciplined architects, this mode of house-building soon attained artistic and material perfection. Apart from the better accommodation and convenience afforded by apartment-houses, and apart from their great architectural merit, there was a further advantage in their adoption. With them, considerably more people could be housed on a given square of ground than with any other plan; for such houses could be built from five to eight stories high without becoming ugly and disproportionate, as strips of façades would do. This was a great point in Paris, which is a city limited in extent by its defensive walls, having at the same time the prospect of considerable yearly growth. And the greater concentration of the people could only be another factor to add to the life and splendour of the city, for what are fine streets and squares with no people in them to give interest and animation?

Sixty feet of front are a minimum in Paris, 80 ft. or 100 ft. are nearer the average. The depth of plots is in most cases proportionately great, which gives rise to another excellent point; courts and court architecture. The courts, which are open ones, generally separate a structure into a front and a back building,

giving light and air to those where required. They are treated architecturally in a simple appropriate manner, but always neatly and cheerfully. The approach to courts is by the wide entrance-hall way, which is often made a carriage-way. This entrance, in all its relations, will be more minutely described under the second head. The buildings of Paris are, as already stated, from five to eight stories high, the majority having the two last stories worked in the roof. The Mansard shape is of most frequent occurrence; but often the last story but one has a set-back front wall of light construction, in which case the roof above is a French roof with flat top; but in many instances a complete Mansard roof rises from the set-back wall. The French roof proper, of rich ornamental treatment, is reserved for monumental edifices, or for such instances of *hôtel privés*, where no important stories, requiring much light, are contained in the roof. For the monumental roof is, in its æsthetic character, a complement to the façade; it is to impress by its lines and its surface, and should therefore not be subjugated and hidden by a mass of dormers. The reasons for making the roof so conspicuous a feature in Paris, are two: appearance and cheapness. In fact, a well-treated roof gives a desirable finish to a building, at a less cost than could be worked in stone; but it also presents great advantages to the general design of a building, especially a high building. A roof permits the serious perpendicular ascent of the façades to be pleasantly released and contrasted, at a height such as to give a good shape to the picture of stone-work below. This effect is assisted by the slate or lead colour of the roof, and this colour furnishes in addition a pleasing gradation from the yellow of the stone to the blue or grey of the sky.

The artistic and perspective effect of Parisian streets is simply magnificent. It is due to the system of building "large," as above examined, and to the prevailing principles of design. There is *agreement* in the various styles of Classic practised in Paris, but there are also individuality of features and variety in details. Hence, *contrast within general harmony* is the key-note of Parisian architecture. Where power, breadth, magnificence of the *mass*; where refined beauty, serene or playful, of separate parts and details are desired, the above principles of design and of building are absolutely necessary, and none others will suffice. The qualities of the individual buildings become at once the character of the whole street and of the whole city. Cornices and roof-lines, ranging at nearly uniform elevation, furnish grand perspective-lines which are strengthened in their power by the uniformity of the stone and roof tints. Beautiful details in stone and metal work, in marble, bronze, and wood, ever varying and ever harmonising, meet the eye at every step, and bright bits of flowers and bright faces everywhere combine with the soothing green of the trees to a picture, such as few cities can present. Who has not gazed along the grand streets, boulevards, and avennes of Paris, but to be filled with wonder and delight!

II. *The Doorway and Continuation of Architectural Effect from the Street into the Building.*

The doorway is one of the most conspicuous and meritorious features of Parisian architecture. The importance which it has received is closely connected with the subject of the first division. Houses which are inhabited by many people will necessarily require liberal space in the common entrance-hall and staircase, and in average fronts of 80 ft., a space of from 7 ft. to 13 ft. can easily be allotted to the main entrance. The width is further determined by the fact of the entrance being made a carriage-road in all cases where there are courts. The dust-man, wagons for removals, and similar vehicles make splendid use of this arrangement; they are thereby removed from the street, where their presence is always an incumbrance, if not a nuisance. Again, cabs can drive right into the building and deposit their passengers at the foot of the main staircase, under complete shelter. For wealthy people who keep their own carriages the convenience and privacy afforded by this roadway are almost inestimable. They can leave for, and arrive from, the opera and balls, in light toilettes, without being exposed to inquisitive looks, or subjected to walk to and from their carriage in cold, rain, or snow. The front-door width is, therefore, regulated by the entrance-way, and it measures from 6 ft. to 11 ft. With a ground-floor of the usual height this opening can always be given a good shape. Full arches, segments or straight lintels are employed, as each particular case may suggest, and the decorative features are as will be presently suggested. There are, though, frequent instances in Paris, where the door-opening is raised to a really monumental conception; where it is from 8 ft. to 11 ft. wide, and where the story above the ground-floor is made a *mezzanine*, the door-opening is boldly taken up two stories high, reaching from 16 ft. to 20 ft. What a proportion! What a field for rich and bold architrave or voussoir treatment, for grand keystones, spandrel-panels, trusses, entablatures,—what an occasion for the sculptor and carver! And whether the doorway be as above, or of a lower description, the opportunity for display is never lost. The wood entrance-door generally fills the entire opening, whether high or low, and fixed transomes are very rare; but in cases where the hall-way is only of the height of the ground-floor, whereas the doorway is two stories high, a little difficulty occurs. Here the mezzanine floor and story must cut across the door-opening. The manner in which this problem is solved speaks volumes for the skill or better taste of Parisian architects. Instead of filling up the mezzanine portion with a stone face, as would be done almost anywhere, that part is treated as belonging to the *door composition*, and is accordingly executed in *wood*. An entablature in wood finishes the door, and covers the floor, and a window to light the mezzanine forms the central feature of the space above. The window-finish, trusses, scrolls, and panels, on each side are designed conformably to what we shall say further on about the doors, and are all executed in wood. Such a treatment leaves to the great stone frame all the importance and æsthetic merit it possesses when the door proper fills its entire space. The doors themselves are not made flat frames, like ordinary room-doors, but are treated in a massive architectural style. If they were not so designed they would lack distinction, and would present too little body for the elaborate stonework surrounding them. The doors are in two folds. The meeting-rail, panels, raised bands, and cappings, are treated in bold architectural forms. Often there are pediments, dentils, rosettes, and sculptured figures. The panels are filled with iron or bronze grilles, and the furniture is in bronze or brass. The details and execution are of the most exquisite taste and finish. Now, let us look at the combined effect before us. We see the entrance to the building, the mouth of the house, treated in a manner befitting its character and importance. In harmony with the whole design, it is by its size and special elaboration made distinctive in an architectural, social, and optical sense. It seems as if all the merits of Parisian architecture were recapitulated and grouped around this entrance to the house. Like a gem in its setting of gold does this door shine out from its frame of beautiful stonework. This is really the portal which leads to the habitation of refined and cultured man. It is visible from great distance to every one, ambiguous to none; and as we stand and admire, this doorway fills us with an instinctive notion that it is hiding even better things from our view. Throwing open the door and looking into the passage-way we are struck by a wealth of beauty. The architecture of the street has entered the building, it is lingering in the hall-ways and courts, it has ascended the grand staircase; and we feel that the artistic atmosphere must continue in the rooms and halls of the separate apartments. The façade which has delighted us is not a show-piece merely to a meaningless carcass, it is the expressive face of a beautiful interior; the whole building is a living organism, in which requirement and expression combine to a perfect piece of art. Conforming to the size of the entrance-hall, the main staircase is wide, with a large open well and square landings. On the top landing of each floor are seen the vestibule doors, which lead to the different apartments. The whole is lighted by large windows upon the courts.

The whole resources of Classic architecture are called in to decorate these entrance-ways and staircase-halls. Whether executed in stone, marble, or plaster, the most ingenious research for originality of design and detail is visible; and bronze candelabra, statuettes, mirrors, and flowers lend individual interest. Where the entrance-ways are of the two-story kind throughout their whole depth, which may be put at from 30 ft. to 50 ft., the architecture often is of the most imposing kind. Pilasters, three-quarter columns, or wholly detached columns, divide the walls into spaces which again are filled with panels, niches with statues, and sometimes doors. Rich entablatures, projecting over pilasters and columns, line the walls. Semicircular arches spring from these, encasing groined or cassetted vaults of the most varied invention. The entrance to the main staircase is made the object of special decorative study, and the promise made is fulfilled to the very top of the house. In the fine *hôtels privés* around the Park Monceau and in Passy the grand staircase is often planned on a lavish scale, and finished in solid stone architecture, terminating with a complex system of vaulting which rises from pilasters, piers, and columns; and sculpture vies with the natural beauty of coloured marbles for a dazzling combination. As we walk along the grand avenues and boulevards of Paris, we throw a rapid glance into each doorway. Through the elegant halls we see into the light court in the depth where the spray of a fountain is playing with huge water plants and flowers. Everything looks bright and cheerful: brass and bronze are shining, there is neither dust nor blemish anywhere. In fact, Parisians live in palaces, and they know it, and are proud of it.

III. *The Window.*

In extensive façades, a well-proportioned and large window-opening, recurring at pleasing intervals, is one of the primary factors of their beauty. Such are the windows of Paris, and they are distinguished for three points,—the size, the window-frame, and the curtain. The single or continuous balcony, a conspicuous feature of Parisian buildings, has tended to add a few feet to the ordinary height of the window, and to obtain good proportions, more width was necessary than usual. With box-frames this might have been inconvenient, but the casement-frame, in exclusive use in Paris, offered no restrictions to the lateral extent of the window. Hence, the proportions visible in most cases are strikingly excellent. This is equally true in regard to the width of spaces between windows, and remarks made under the first head are very significant in regard to this essential condition to good architecture. Large windows offer scope for elaborate decoration with compound architraves, pilasters, entablatures; in the endless variety of composition possible, the most refined fancy for ornamental carving can find application. Instead of leaving the separate windows æsthetically detached from one another, a skilful treatment of the intermediate spaces combines them all, making of the wall of each story a continuous and homogeneous feature. Thereby, the window-composition obtains weight and character to enable it to maintain its individuality against the architectural concentration effected around the doorway, and the mezzanine cornice and balcony work. The casement frame greatly assists the window opening in all we have said in its favour, for instead of cutting it horizontally in two equal divisions like the box-frame does (an eminent æsthetic defect) it divides the opening *vertically*, accentuating the oblong shape, adding grace and elegance. In high, or even ordinary windows, a low transom can be introduced to decrease the length of the wings, and to facilitate the access of air for ventilation. In these cases the horizontal transom line is not objectionable, on account of its high position; often even it greatly enhances the beauty of the window by improving the shape of the wings. The casement frame is therefore a very artistic feature, for apart from its relation to the opening, it offers in the central meeting-rail and in the transom an opportunity for rich and effective treatment which can be made to materially aid the appearance of the whole window. The curtain has been mentioned as the third principal feature to the Parisian window, and as it hangs down, white as snow in beautiful lace patterns, in one unbroken fold over each wing, it gives an impression of neatness, cleanliness, and of rich cheerful comfort within, that our most costly blinds cannot produce. The white lace curtain of Paris (where it is seen in the humblest street) takes away that dismal, black, cold look, with which our windows habitually greet us; it makes the houses look bright and inhabited. This curtain also adds *body* to the window; it is like the picture for the frame of stonework, and the effect that Queen-Annists are striving for

with small panes pattern and shadow effects, is realised in a more effective, elegant, cheap and useful manner by these simple and practical curtains. Impenetrable from without, they are as clear as glass from within; they seem in their whiteness rather to increase than diminish the amount of light; and with the addition of *lambrequins* they make as neat a window-finish as can be desired for all ordinary cases. The three points which we have enumerated as characteristic of the Parisian window combine to a very pleasing and satisfactory feature, and it will be seen that they are all in turn dependent upon each other for their existence.

Glancing back upon the material we have presented, we will attempt to sift from the various facts examined the essence, or *raison d'être*, of the general excellence of Parisian architecture. For to counsel blindfold copying of foreign art elements is as completely removed from the writer's ideas as it is possible to be. In fact, the very spirit of this dissertation has been to show that Parisian architecture,—widely admired, but even more widely misunderstood,—is not a senseless conglomeration of nice decorative features and details, that can be pulled to pieces and isolately scattered here and there on foreign soil without injury to their original sense and merit, but that it has a broad material foundation, contained in the three divisions of which we have treated. This foundation, though, which we have previously called the *field of action*, has been shown to be the result, not so much of natural development as of wisely directed effort. Paris is, above all other cities of the world, a city built by architects, a city of architecture. Wherever we may go, the smallest streets will eloquently proclaim the fact! But more are we induced to comprehend as we proceed. The harmony, the unity, of this sea of architecture, will force itself upon us, and with satisfaction we exclaim:—There is system, there is direction, in this mass of work. A tie of common sentiment, ideas, and aspirations in matters of art and taste, unites all French architects to a homogeneous and intelligent body. This tie is the common great school upon the Quai Malaquais, from which they have all proceeded. Filled with similar views, taught to think in similar channels, and to strive for similar ends, is it to be wondered that modern Paris is like one great monument, cast in one mould? Yet, what a wealth of individuality within the harmony of the whole picture! It seems as if the restriction imposed upon individual fancy acted more as an incentive than otherwise, to attain within the given limits the greatest variety, the greatest perfection. The pressure exercised upon the general tendency of Parisian architecture by a well-constituted and competent authority, has been touched upon under the first division. This wise and far-seeing direction instituted by Napoleon III. still exists, and exercises its powerful influence upon all building operations. This pressure, though, is easily and gladly borne when it is remembered, by architect and client, that its objects are the beauty and glory of the city. The main inferences, therefore, which we are permitted to draw may be stated as follows:—Architecture as an art should be the intelligent penetration of requirement into decorative expression and *vice versâ*. It should be freely developed upon such material conditions as are absolutely necessary to raise it from mere *building* into the higher domain of art. Where such conditions do not naturally exist they should be obtained; *that field of action* which embodies the greatest possible chance for artistic success, individually, or, in the case of street architecture, collectively, should be *created* and enforced by competent authority.

Joseph A. Stark,
Élève de l'École des Beaux Arts and Disciple of Prof. G. Semper, of Vienna.

Euchlorine.—Attention is being directed to a new disinfectant, as suggested by Dr. Archer Farr, medical officer of health for Lambeth, and to which has been applied the name "Euchlorine." It is being used in some of the metropolitan asylums and other public institutions, and appears to be one of the most potent and reliable disinfectants known, while it is most convenient in its mode of application. It can be so regulated according to the quantity used as to serve as an air-purifier in the sick-room, or as the strongest disinfectant. It seems to have considerable advantages.

COMMON SENSE IN ARCHITECTURE.*

Mr. Fergusson, in the admirable introduction to his "History of Architecture," says, "Convenience is the first thing which the practical common-sense of the Aryan seeks, and then to gain what he desires by the readiest and the easiest means." From this ancient Aryan stock John Bull claims descent, and common sense is a very strong article of his creed.

When and wherever architecture has been practised as a living art, as the outcome of the wants of the people who practise it, especially in those styles and ages which are generally reckoned by the educated as the purest, this quality of common sense is everywhere recognised, as their works are eminently practical and logical. From the rock-hewn cave and rude hut to the stateliest edifice this principle will be found to exist, and though a common-sense building may have no artistic beauty, a building which sets common sense at nought will fail to please the intelligent observer.

Of the æsthetics of architecture I do not propose to treat this evening (except so far as may be necessary to illustrate my meaning), but rather of the practical side and of modern times, as it is difficult in the short time at our disposal to take a very wide range of the subject; but I shall endeavour by illustration and example to point out the necessity of common sense in architecture, and to show that where it is ignored or wilfully omitted that building cannot fulfil the conditions of art.

Common sense is a gift which is not implanted in the breast of every man, and where it is, it must, like every other talent, be cultivated, so that it may gain strength by experience. But the man who adopts any profession or trade is expected by those who employ him to exercise this quality, to cultivate it, and bring it to bear upon the work he supplies; and this, more especially, in a profession where those habits known as business ones form a large part. In our calling it is essential, in the interest of our clients and the nature of our business, that we should strive to conduct it on common-sense principles, for any departure from this will lose us respect and influence in the minds of our employers, the mischief arising from which will extend beyond ourselves, and weaken that respect which we should strive to hold in the eyes of the public.

The charge often brought against us as a body is this want of common sense, that we are not practical, and many find a peculiar pleasure in pressing this accusation. Every blunder committed and brought to light in building must be laid at some door, and our accusers are happy if that door has the name of an architect upon it. Charges of ignorance in sanitation, which, at the present time, is exciting, as a science, so much attention, are hurled at us broadcast, and this is done by people who, if they exercised the common-sense maxim of looking before they leaped, would hesitate, and first ascertain whether an architect had been employed at all on the work which they condemn, and bear in mind that a very large amount of building is carried out quite independently of our services,—that by far the larger number of us are lodged in houses provided by the speculative builder, whom it is not incumbent upon me to defend. He is a most useful man to the public, is created and supported by them, provides wares to suit all pockets, and it is, at least, a little unfair to charge him with the faults inherent in the article which he somehow contrives to sell the public for a sum absurdly below what such an article would cost were it made of true metal.

Further, where this charge of want of common sense is brought against us, the question will arise, What is common sense? You think so and so, and I differ from you. On the whole, considering that I make a study of my work, I ought to know best. Such questions as this must and do arise, and it would be impossible to lay down definite rules, and say this work possesses, and this other does not possess, common sense.

It is easy, of course, to quote gross cases in which this quality under discussion does not exist. For instance, a house without a staircase, a living-room without a window, a house built without proper foundations, or in the midst of a swamp, and expected to be dry, when no provision has been made to guard against the situation, and so on. Here, perhaps, we should all agree that no defence could be made, and we have no hesitation in saying that the persons responsible for such doings lack common sense.

Let us also take other examples, which require a higher perception of this faculty than those just quoted. We have in the present day a rich store of illustrations of the architecture of the past ages, and I think you will take it for granted that the building generally tells you the purpose for which it was erected, if you are familiar with its style, and we all agree that a work should express this common-sense requirement. But often in modern times we find that this is ignored. In the Gothic revival, a movement which has been so beneficial to us as a nation, it is not to be wondered at that enthusiasm carried many of its disciples beyond the region of common sense, and that blunders were made which we must deplore. In the rage to build everything Gothic, the world containing the relics of the past has been ransacked, and the treasures gleaned have often been misapplied. Let us take an ordinary dwelling-house, for instance. It is not unusual to find the porch looking as if it had been brought from some village church, and though it fulfils its practical common-sense purpose, it does not commend itself to common-sense intelligence, which demands fitness and expression of the use for which the work is intended. Neither are we impressed, on entering a small hall or dining-room, to find a chimney-corner recess large enough for a spacious apartment, and there appropriate enough, but out of scale altogether where spaciousness could not be obtained. Common sense seems to demand that the fireplace should be proportioned to the scale of the room. Attempts, too, have often been made to plan houses on mediæval lines, ignoring the fact that the world has grown older and more civilised, demands refinement of plan and has introduced requirements which can only be met as they arise. Instances might be found where the dining-room has been so placed that it had to be traversed by any person requiring access to the stairs or kitchen, and this not from want of skill, but from a desire on the part of the architect to reproduce the simplicity of living as it existed in the past. As well may we try to persuade people to go back to the inconvenience of the old stage-coach and the slow delivery of letters. Yet many of you must know that attempts almost as unreasonable and deficient in common sense have been made by many men who, instead of seizing the spirit of the past, and designing in it, seek to reproduce the letter, and are imitators only. Again, we sometimes see a church-like gable and traceried window engrafted upon a house in the part occupied by the staircase, and looking more like a private chapel. The whole does not express its purpose. Both gable and window were right where they originally came from, but, transplanted, the incongruity is apparent to intelligent criticism. The butler carrying the dinner up this staircase in monk's garb would be thought quite out of place, and yet, would it be much more incongruous?

Church restoration and building both offer much food for reflection, as the most prominent result of the revival. The difficulty of building houses successfully in the Gothic style has always forced itself upon the attention of the designer. Our mode of living is so out of joint with it that it promises soon to go out of fashion for domestic purposes; but for ecclesiastical buildings it will probably survive, though even here there are signs of reaction. Now, as to restoration. The use to which our churches are put will vary according to the requirements of those who use them. Our days witness a return, in a large party of the Church, to more ceremonial observance. Previous generations had in their day ignored ceremonial, and at the Reformation had cleared the churches of all that, to their minds and teaching, symbolised the faith of their fathers. With the enthusiasm of the time a clean sweep was made of everything that served to recall the hated doctrines, and, from their point of view, it was a common-sense proceeding. These things represented, to their eyes, error and false teaching. Away with them. We know what followed. Whitewash, ceilings plastered up, churchwarden additions, pews, galleries, three-deckers. Then came the revival in church principles, and the demand for buildings which should act their part in teaching these, and men set themselves busily to work to restore and build churches to this end, and the example has been followed even by those who still adhered more strictly to the

* Paper read at the meeting of the Architectural Association on the 19th inst., by Mr. Cole A. Adams, as elsewhere mentioned.

spirit of the Reformation. The religious aspect of this question is obviously only touched upon here to illustrate the reason for this change. If, as we have seen, the Reformers looked upon the building and its furniture as of no importance in teaching doctrines, the revivers of ceremonial in our day insist upon the building and furniture fulfilling this purpose, and so making use of the senses by external teaching. This being so, it is obvious that our churches, as they were some half-century ago, were a standing protest to the new school of divines. They demanded that, for the proper and reverent conducting of the services, all those fittings and additions which we know as "churchwarden" should in their turn be swept away. As men's attention was called to our churches, the beauty of them became a popular study, and we all know how the enthusiasm spread, and what it has produced. This revival in the Church demanded, as we see, a return to the teaching of art as part of its system, and though its advocates do not insist upon it as a necessity of their creed, they welcome its use, as soldiers do the colours under which they serve. From this point of view, I think it may be granted as a perfectly common-sense way of effecting their end.

From the zeal with which the restoration of our old buildings has been carried on, much irreparable mischief has resulted. It is a natural consequence that it was so; for experience must be bought. What we have to look to is to buy it at the lowest rate possible. Seized with alarm at the blunders that have been made, many have rushed to the opposite extreme, and would stay the hand of the restorer altogether. These worthy people, actuated by honest motives, would leave the buildings as they are, or only do what was absolutely necessary to prevent their decay, by keeping out wind and weather. As archæologists and students, it is impossible to withhold sympathy from such intentions. With what delight do we enter a church where we find the whitewash and grey hairs of age! Here there is no mistake likely to arise as to what was part of the original building and what is churchwarden. You would probably after a little study of it be prepared with a scheme for restoring the fabric; but you doubtless will miss a great deal of pleasure if, on paying a visit to it at another time, you find your old friend with its hair dyed, and made young again, by some other restorer. But suppose the anti-restoration men had their own way. Decay we know is the mortal inheritance of all earthly things, and does not common-sense experience teach us that there is a limit to patching and propping; that circumstances often arise, over which we have no control, which necessitate radical alterations; that our buildings are from time to time put to new uses to which we must bend them or else leave them to decay? Leave them, say some; build others for what you need, but touch not with altering hand these stone books of the past. But, says common sense, these buildings were erected for the purposes of worship, and men in previous years adapted them to their needs. This dedication to their high purpose is the most important, and therefore, as long as they afford shelter and can be made use of, men will avail themselves of them. Your interest in them is altogether secondary to this. Is it not impossible to lay down definite rules of what shall and shall not be done? Common sense must be used, and, further, we may say that, in dealing with such treasures as are bequeathed to us, only those well skilled in the work to be restored should be employed; and it is a pity that we have not some central authority to restrain such work from falling into the hands of men who, from want of sympathy with and ignorance of what they undertake, do an amount of mischief which is beyond recall.

In the building of new churches, common-sense requirements are too frequently overlooked. Here, as in other things, men forget that the world has moved on since the time that it produced the works that we admire, and that the more artificial life we lead now requires that more attention should be paid to the comfort of the people who are compelled to worship in cold and draughty churches. Because great simplicity in all such matters is found in the old churches, that, surely, is no sound argument for not seeking improvement in new ones. Now it is only common sense to know that, if you have a door opening direct into a building, and the weather is cold, the chilled air will enter by it, and make those people miserable who are in contact with the draught occasioned. Architects seldom dream of doing this in any other building where people assemble. We all know that in a house, where the money to be spent will allow, screen-doors are put to a hall, and in most cases some sort of a passage cuts off access from an external door and a room door. Why, then, should a congregation be exposed to danger,—for real danger it often proves to be,—by omitting so simple an expedient as a lobby of some kind? Contrast the comfort of a church or chapel where this is done with one unprotected from the blast.

Another serious omission is the absence of any mechanical and simple contrivance for admitting fresh air from outside, and warming it before it enters the building; for in winter, and the one we are having now calls our attention to the fact, it is misery to sit in a building with the windows open; so a close and stuffy atmosphere has to be breathed, no means existing to get rid of it and to supply fresh air in its place.

Other great causes there are which militate against warming our churches,—the large amount of glass, and the open roofs, both great chilling surfaces. Moreover, sometimes the boarding to the roof is not tongued, so that the hot air finds a ready escape, and so the heating apparatus is comparatively useless.

Common sense in planning is often sacrificed to supposed architectural effect, and as seeing and hearing are the most important points to be met for the comfort of a congregation, although where the means at disposal are limited, some sacrifices to effect may readily be granted; yet where this is not the case it is assuredly foolish to so seat the congregation that their view and light are interfered with by facing walls and other obstructions. These are difficulties that arise, and to ignore them for the sake of carrying out some likeness to what we have seen elsewhere, and for which, probably, sound reasons might be advanced, is a confession of weakness, and to this error may be attributed much of the lifeless work we have in our midst.

What a perfect medley do some designs present: here part of a monastery, there of a church; details reduced so in size from the originals from which they were taken as to look starved and wretched; chimneys overtopped by high roofs that will be sure to make them smoke; buttresses to resist no thrust; windows stuck in for appearance, coming anyhow to the rooms, now close to the floor, now above looking-out level; roofs that must from their construction thrust out the walls; passages ill-lighted, and tortuous in their windings,—these and other mistakes arise from ignoring the common-sense requirements of the purposes for which the building is intended, and with the mistaken idea of producing architectural effects by trusting to appearances only. Careful consideration of the plan, and working out of heights and sections of the construction, would have shown the designer his mistakes; and a more intelligent studying of the works which fill his sketch-book, that what looks well and suitable in a position for which skill has designed it, may become ludicrous if placed in a position which is foreign to its original purpose.

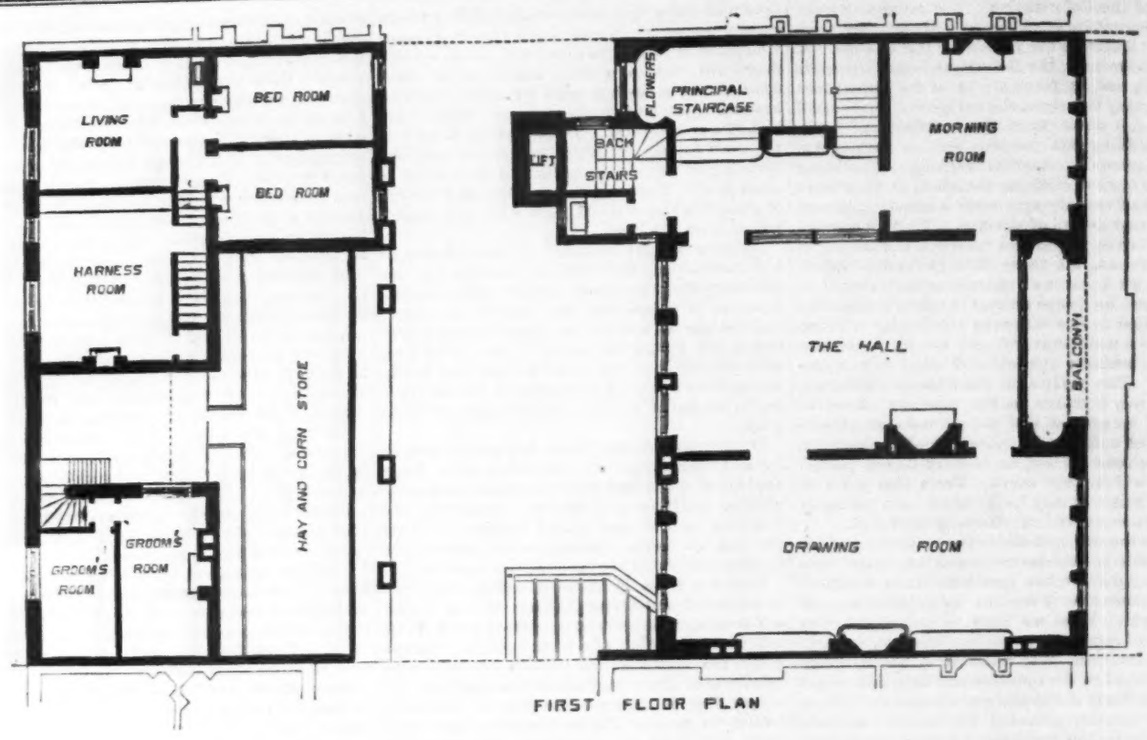
I cannot leave this part of my subject without a brief allusion to the style which has somewhat quenched our Gothic ardour, and which, for want of a better name, is called "Queen Anne." I believe I am right in saying that its sponsors promised in its name essentially common-sense qualities, and that it would more readily adapt itself for house architecture and modern wants. In my own opinion, I think there is much in it to commend itself as a style, but it is possibly only the prelude to a revival of Classic architecture. Here, as in the Gothic revival, men are and will be found hunting up old examples, and trying to make new houses look as much like old ones as possible; and as long as imitations are the fashion no real progress can be made. Touching Queen Anne, common sense may ask, Why is it necessary to return to small panes of glass, and thick bars which obstruct the view, when you can get larger. Would the old builders have put them if they had not been obliged? Why is it that porches are built, and cut off short of the cornice, looking as if you had not bricks to finish with? To get light into the hall? But surely you can do this without resorting to so foolish an expedient. And why, in this dirty London climate of ours, do you paint your outside doors white or pale dull greens? After the first week's use they are dirty and disagreeable to look at. And while on the subject of painting, a great deal has been said against graining and varnishing: it is decried as a sham. But if you will soothe your conscience by calling it a conventional mode of decorating doors, &c., you will have a most useful agent. Beyond all question, for ordinary purposes, there is nothing that on the whole wears better, looks better, and goes better with the ordinary furniture and belongings of a house,—a thoroughly common-sense method. But, to resume, why is it necessary to stick up tablets on blank walls, in all manner of positions, looking as if they had been bought up from a church under restoration, and set up here as a protest against the vandalism that removed such precious works of art? Why, too, we may ask, is it necessary to be putting balconies, balusters, and railings where they are not wanted at all? And other questions of this kind will be forced upon you, if you will take a walk in the neighbourhood of the Thames Embankment or Pont-street, and study the designs which are weekly supplied to us.

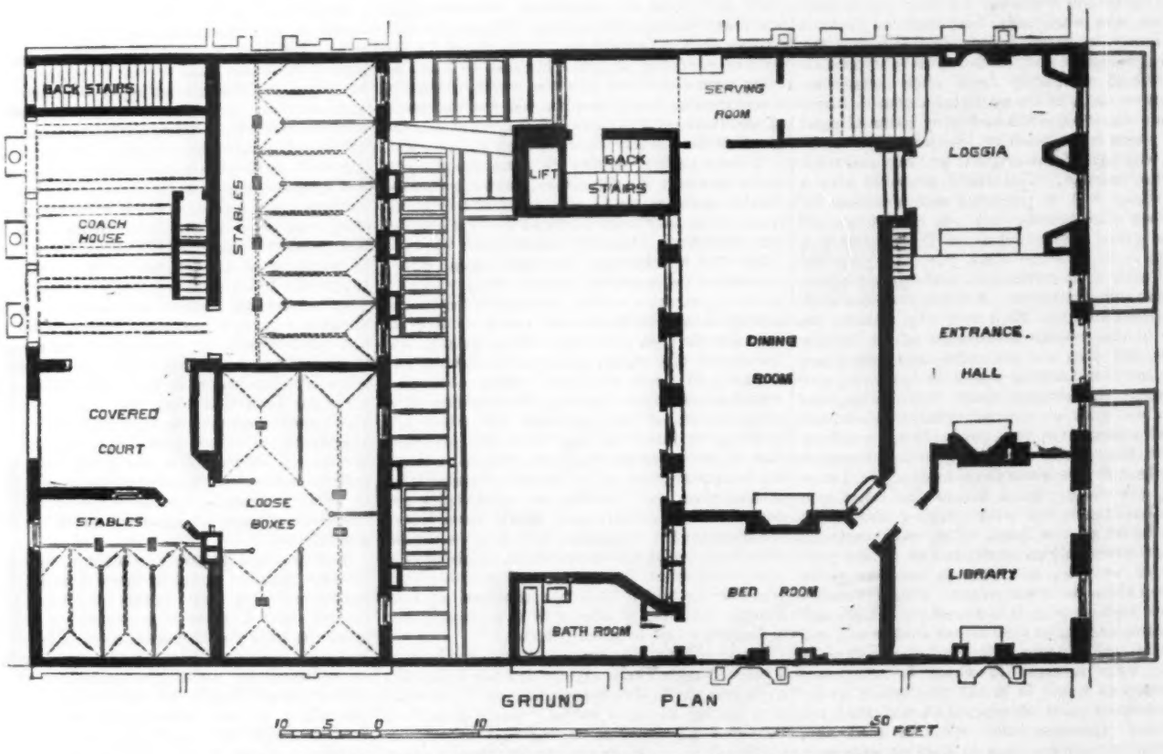
Much of the charm of the red brick style consists in its colour, and there is no doubt that it has great capabilities when used with skill and sobriety. Too much of what we see is rendered feeble by the fussiness displayed and the ignorance shown in the mouldings, which are too often of a nondescript form.

I will, in conclusion, make a few remarks upon some of the causes which conduce to failure and violations of common sense, hoping to fulfil the object of this paper by exciting discussion upon it. I believe that the main cause lies at the root of professional training. Lads are articled to an architect, and left in the office, too often to shift for themselves. You all know the usual course, so I need not stop to describe that; but I would urge the importance of reform,—that it should be an understood thing in the articles of agreement that a pupil should spend a large part of his time upon works in progress, that he might see for himself what drawings mean when carried out, learn the different modes of construction,—from foundations to painting,—be compelled to make measured drawings from the work, accurately showing how the parts are put together, and to make himself familiar with the terms and methods used in building. Better still, that after his pupilage was up he should, if it can be managed, be sent for a couple of years or so to a large builder, and there taught the practical side entirely of the question, even to manual labour, and that perplexing study, a builder's account. Engineers do this, and their works are pre-eminent for common-sense. Why should not architects make themselves also familiar with the capabilities of the materials in which they will have to work? The knowledge thus gained, combined with the experience of the office, and careful and systematic studies from old examples, would produce men skilled, theoretically and practically, in their profession; and to those within reach the Architectural Association offers immense advantages.

That we, as a profession, should hit upon some feasible plan by which competitions might be conducted on a fair footing, is much to be desired, and I trust that when the subject comes up here for discussion, some remedy will be found. If the Institute and yourselves were to combine to resist the injustices of the system, much might be done to discredit it. One thing we may assume as certain. The competition system exists, and is more or less popular. What is asked for is fairness from projectors and among competitors themselves. The appointment of a skilled professional man as referee seems a necessity, for this very common-sense reason,—no layman is competent to decide upon designs, and discriminate between rival merits. If competitors knew that designs must undergo the scrutiny of plan, sections, and details, those crucial tests of a man's practical knowledge, better designs would be sent in, and the simply draughtsmen-architects would be nowhere. Too much stress has, I believe, of late years been laid upon this quality of draughtsmanship and sketching. Excellent as accomplishments, they are not the be-all and end-all here.

St. Alban's.—We have received another letter from Mr. Chapple reiterating his assertion that the section he gave in our columns "was from a portion of the ancient corbel-table over the three eastern bays on the south side of the nave, to which Mr. White first alluded, and that the old pieces of stone still remain there."





A HOUSE ON THE THAMES EMBANKMENT AT CHELSEA.

A MANSION ON THE THAMES EMBANKMENT AT CHELSEA.

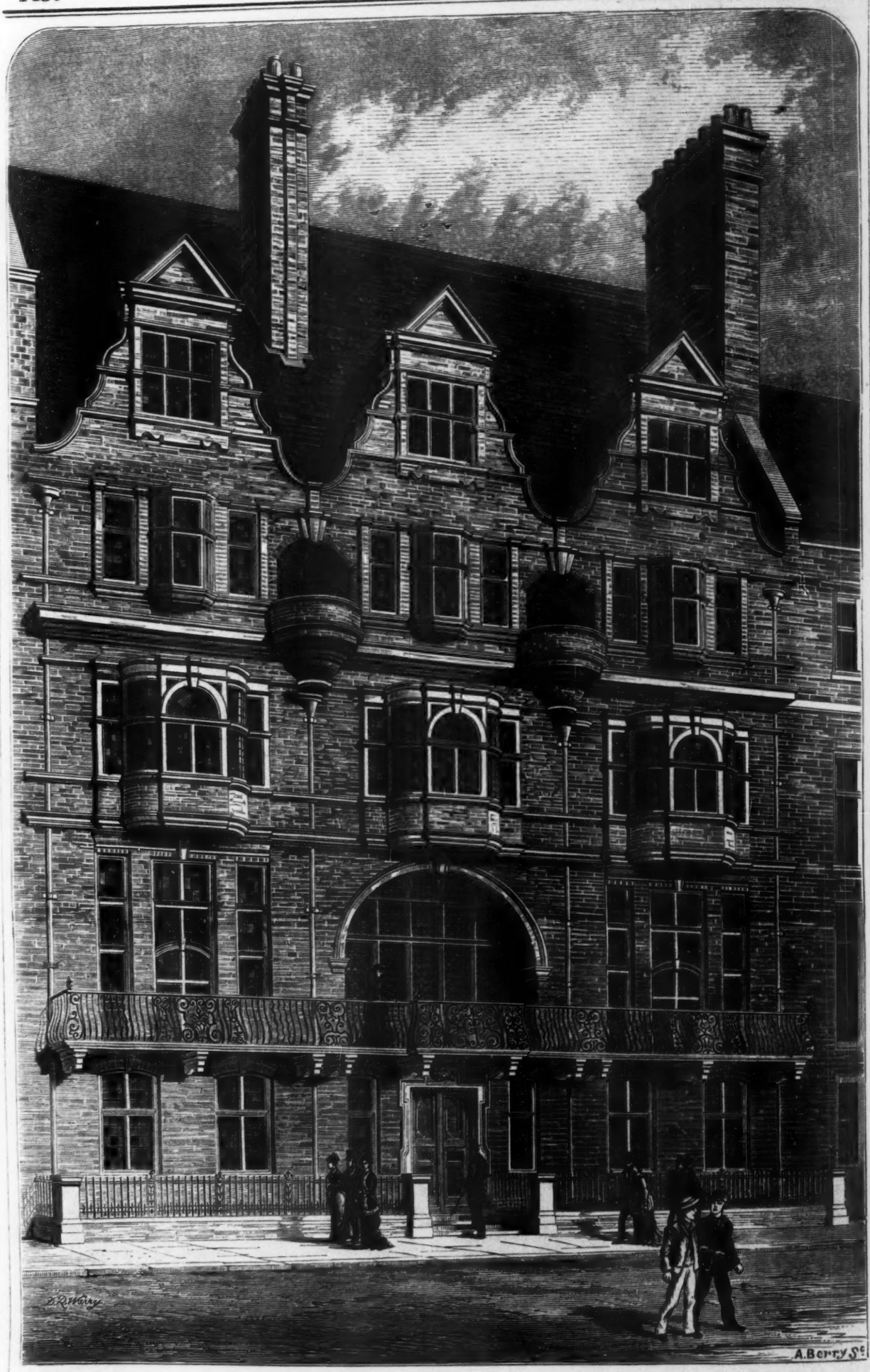
The residence on the Chelsea Embankment, of which we give a view and plans, is in course of erection for Mrs. Erskine Wemyss, from the designs of Mr. R. Norman Shaw, R.A. It stands nearly opposite Battersea Park, and is near to Cheyne Walk. The style adopted, termed that of Queen Anne, suits well the *genius loci*, and a number of other costly houses similar in style adjoin it. It is faced with red bricks from Fareham; the dining-room and staircase will be panelled in oak. The amount of the contract, including stables in the rear, is, we believe, about 13,500*l.*; but some few alterations have been made in the façade since it was first designed. The contractors are Messrs. McLachlan & Sons, of St. James's-street and Clapham-common.

SHRINE OF ST. CYMBERT

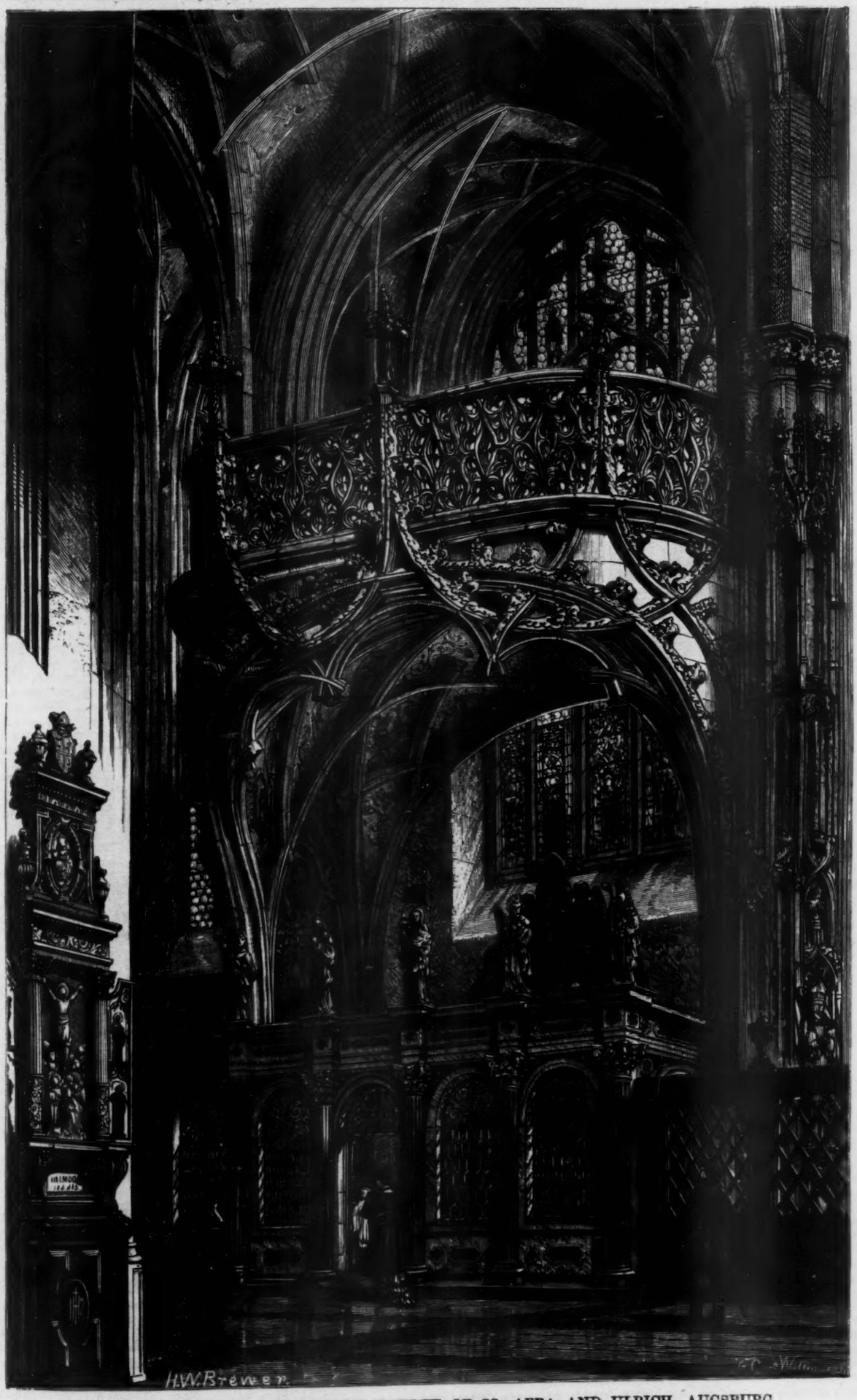
IN THE CHURCH OF SS. AFRA AND ULRICH, AUGSBURG.

The Church of SS. Afra and Ulrich, Augsburg, one of the latest examples of the German Third-Pointed style, was erected between the years 1476 and 1500. It occupies the site of a former church, which dated from the year 1064; of this building, however, very little remains except the basement of the tower, and no detail is visible even here to give any idea as to its design. The architects of the existing building were, first of all Hans Lintpold, and after his death, Burkart Engelberger. Of the former of these very little is known, but the latter was one of the architects of the tower of the Cathedral of Ulm, and of the magnificent pulpit in that church.

The Church of SS. Afra and Ulrich is one of those magnificent and vast parish churches with grand spacious naves, so appropriate for congregational purposes, which were developed during what is considered the decline of Gothic architecture. It consists of a very lofty nave and aisles, with a very noble clearstory, very short transepts, and a long choir without aisles; the tower is in the north-east angle of the choir and transepts, and attached to it is a large chapel, called the *Schnekenkapelle*. The church is full of very rich furniture, chiefly of the Renaissance period. The altar of the Schnekenkapelle, however, and the shrine of St. Cymbert, are Gothic, and fine works of their kind. The nave of the Church of SS. Afra and Ulrich was the first portion erected, and according to Kugler it was commenced in 1467 and completed in 1499. There is some doubt as to the first of these dates, and probably the date given by Kugler is a misprint for 1476. Kugler



A HOUSE ON THE CHELSEA EMBANKMENT.—Mr. R. Norman Shaw, R.A., Architect.



SHRINE OF ST. CYMBERT, IN THE CHURCH OF SS. AFRA AND ULRICH, AUGSBURG.

says the choir was commenced in 1500, and the whole building not completed till 1607; this, however, thoroughly disagrees with the local tradition that the Emperor Maximilian I. was present at the consecration of the building, as the Emperor Maximilian died in the year 1519. In addition to this, the dates given by Kugler would not in the least agree with the architecture of the church, no part of which, except the lantern on the top of the tower, and some of the fittings, can be of so late a date as 1600. An excellent little guide-book to Augsburg gives the dates of the church 1476 to 1500.

The proportions of the building are very noble, the total length being 318 ft., the breadth of the nave and aisles 94 ft., and the height to the vaulting 100 ft. The shrine of St. Cymbert, or, as it is sometimes spelt, "Simpert," is situated in the south aisle of the nave, and consists of a large and very remarkable canopy of stone richly vaulted and cusped. A remarkably rich parapet surmounts the whole. The space beneath this canopy forms a chapel, the screen of which is a very beautiful example of early German Renaissance work, and is composed of marbles of various colours. This screen is said to have been the gift of one of the Fugger family, who were great benefactors to this church. The tomb and fittings of the chapel are of a much later date, and, though handsome, are too much in what the Germans call the "Zopfzeit" * style of architecture to be particularly interesting.

FREDERICK PEPYS COCKERELL.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

In the discussion which followed the reading of the memoir on the late Frederick Pepys Cockerell, read at the meeting of the Institute on the 15th inst., and the substance of which we printed last week (p. 1393 *ante*),

Mr. Charles Barry, in moving a vote of thanks to the anonymous writer† of the paper said:—The eloquent memoir which has been read must have touched your hearts, as it has mine. The writer desires his name to be unknown, and there appears to me to be a strange propriety in his name being unknown, because he has spoken the sentiments of us all, and, therefore, we can sympathise entirely with the writer. Many of us,—most of us, I think,—had some personal knowledge of poor Cockerell. It so happened that I was in Paris on the day of his lamented death, and I was one of a party, mainly composed of Parisian architects, who had assembled at the house of the late M. Duc to do our comrade honour, and we were awaiting his arrival when the sad news came of his death. A gloom came over the whole of the Paris community of architects, with which I was then officially mixing, and the prevalence of that gloom testified to the esteem in which our departed friend was held. Lament for him I think we cannot; lament for ourselves of course we may. Had it been in the providence of God to have spared him to a green old age, I believe that every aspiration which the affection of his friends could desire would have been entirely and fully satisfied. He is, I think, to a certain extent to be congratulated, if I may so say, on leaving such a memory as he has done amongst us. One short year has passed since we saw him here amongst us, rejoicing, as he did, in the advance of our profession in public esteem, —an advance which this Institute has had no mean share in bringing about. In the promotion of that work he took a labouring oar with his colleagues. He knew the esteem in which he was held, and he had reason to believe that the work which had been done had left its impress. Some allusion was made in the paper to his at one time idea and desire to become a painter rather than an architect. Many of us, I am quite sure, in our younger days, could have quite sympathised with the feeling. We must all of us have felt great delight in the fields of imagination in which our studies naturally lead us, and some hesitation against entering upon the prosaic duties of business and science with which the art of architecture must of course be inseparably connected. But that feeling of appreciation for art, that indulgence of the imagination, is just one of the recompenses which we occasionally have for the daily routine of business life, and but for that, I think the profession of architecture would have little or no charm for many of those I see around me.

Mr. Charles L. Eastlake (late Secretary) in seconding the vote of thanks, said,—The brief but faithful memoir which has been read this evening is one of deep interest to me, for many reasons which may easily be guessed. I enjoyed our late colleague's friendship for more than twenty years. Indeed, it was while I was a pupil in Mr. Hardwick's office, which he entered for a year or so to complete his studies, that I first made his acquaintance. We attended Professor Donaldson's lectures together, and I think became students of the Royal Academy about the same time. There are, no doubt, some members of the Institute in this room who remember him in those early days, and I am sure they will agree with me when I say that in the youthful *coterie* to which we then belonged there was not a brighter spirit, a kindlier heart, or a more accomplished hand than that of Fred. Cockerell. The accident of Mr. Cockerell's family connexions gave him, while still a young man, an *entrée* into the world of fashion, where his brilliant social qualities, his genial disposition, no less than his artistic ability and highly-cultivated taste, soon made him a general favourite. But although in such society he was the gayest of the gay, the popularity which he then enjoyed, and which might have turned the heads of weaker men, did not make him vain or indolent. He possessed that happy faculty which distinguishes some professional men,—of being able to work and play by turns; and he did both with equal zest. Behind that easy *nonchalance* of manner which he sometimes assumed, there was in reality a deep and earnest devotion to his art, and a capacity for taking pains which was very remarkable. He was rarely satisfied with his own designs, and it is probable that his artistic aim was often beyond what he succeeded in realising. One of his early characteristics made a great impression on me when a boy. I mean the intense filial respect and devotion which he felt for his father, who in his turn was equally proud of his son. Indeed, it was delightful to see the two men together, and to note the love and confidence which existed between them. Manly and straightforward in his opinions,—upright and honourable in his professional career,—with a supreme contempt for all that savours of bigotry and affectation in the art which he followed,—Frederick Cockerell was, to my mind, and I believe in the opinion of most who hear me, admirably qualified for his position as honorary secretary to this Institute; and I can truly say that during the seven or eight years in which we held office together,—a period of uninterrupted cordiality between us,—I never sought his advice in vain, and that advice always seemed to be dictated by a sound and accurate judgment. Of his professional works, I, who am now altogether outside the profession, will leave others to speak; contenting myself with this brief tribute of respect to the memory of a dear friend and former colleague.

Mr. George Aitchison said,—"Those whom the gods love die young," and I think we cannot regret for poor Fred. Cockerell that he was cut off in the flood of youth, health, happiness, and success; but for ourselves, as architects and Londoners, and for England, I think it is one of the greatest misfortunes that has happened in our profession. Fred. Cockerell was to architects what the president of the Royal Academy was to painters,—in him all their hopes were centered. He was the representative of the great architects of the Renaissance. He was many-sided. Like a cut crystal, there was no side on which you could take him on which he was not fully equipped. He was able to criticise with keenness and ability the works of our popular novelists and of our painters and architects. One cannot have passed much time amongst the best works of the Italians and Greeks without feeling that Fred. had caught some of their charm and inspiration. Had he lived, he would doubtless have made many fine additions to the buildings of London and the country.

Mr. Horace Jones.—As the oldest, I believe, of a small *coterie* of architects who for twenty years have been in the habit of enjoying kindly, friendly, brotherly, social intercourse, I feel it difficult not to attempt to add one word on behalf of those who are left, with myself, as a tribute of our respect, our esteem, and our love for our lost friend. Another one went before him,—Digby Wyatt,—well loved, well revered, well respected, and to our deepest regret. There are a great many here now who for twenty years have enjoyed the social friendship of poor Fred. Cockerell, and, leaving apart his high intellectual qualities, we must all look back with sorrow to the loss of one who had such a cheery, honest, English character.

The Chairman (Professor Hayter Lewis, V. P.), said,—I do not think any one can feel more deeply than I do the touching way in which the writer of the memoir has portrayed the life of our lost friend. Like most of you I knew him well, and worked with him, and I think no one can speak more feelingly than I can of the constant pleasure that it was to be with him, and of the artistic elevation that one had in conversing with him upon all points connected with art. Of his possible career as a painter, what his success might have been is sufficiently indicated by the exquisite sketches exhibited this evening. That we owe a great deal to him for the large amount of time he devoted to us and our interests there is not the smallest doubt, and we can only feel that, although "those whom the gods love die young," yet his loss leaves behind him a great vacancy, which it is difficult to fill up. It is with the most lively remembrance of poor Cockerell that I beg to move that a vote of thanks be given to the author of the very feeling memoir which has been read by Mr. White.

The motion having been carried, the meeting was made special, to consider the revision of Bye-law 34. The bye-law was expunged, and in place of it the following was inserted, viz.:—"Honorary Fellows shall not be required to pay any subscription or make any donation to the Institute." It was further resolved that the Council have power to alter or expunge, in Bye-law 64 and other bye-laws, words affecting the spirit or intention of Bye-law 34 as it now stands. Certain amendments were made in the nomination forms for candidates for membership resident abroad, and for Honorary and Corresponding Members.

The next meeting will be held on Monday, January 12, 1880, when a paper on "Buddhist Architecture in the Jellallabad Valley" will be read by Mr. William Simpson.

THE EXAMINATION OF ASSOCIATES OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A CRITICISM FROM AN UNPROFESSIONAL PEN.

It appears, from the opening address of the President of this Institute at the first meeting of the present session, that the question of obliging all persons who desire to become Associates in the future to undergo an examination is under the consideration of the Council, although by Bye-law 14 the examinations are to begin in 1882. This step is one of so much importance to the Institute, and consequently to the architectural profession, that it is worthy of careful criticism, and we opine that one reason why Mr. Whichcord alluded to it in his opening address was that it might be publicly discussed. There is a well-known line of that shrewd observer, as well as true poet, Burns, in which he expresses the wish,—

"O wad some power the giftie gie us
To see oursels as others see us."

Therefore it needs no excuse, acting upon this maxim, for one who is not an architect, nor ever likely to be, to offer some remarks upon this subject in a spirit of fair criticism.

Now, we take it that the chief object of the Institute is to collect within itself as large a number of the architectural profession as possible, and to exercise, as far as possible, a beneficial control over its members, keeping them in the way that they should go, promoting a true *esprit de corps*, and regulating the general body of the profession in the best interests of the profession and of the public, whom they must "please to live." And next, we take it that the object of an examination is to show that persons have an intellectual knowledge equal to a certain standard, a standard which is above the average,—because if every one possesses a knowledge equal to this test, it would be absurd to be continually applying it. It is true that in some cases the object of an examination may be to lessen the number of applicants for particular posts; thus it is obvious that if gentlemen were not examined as to their fitness to enter the Army, the War Office would

* Literally the "braid period," or, as we might say, the "pigtail style."

† It was announced, when the memoir was read, that it had been written by a very close connexion of Mr. Cockerell, but that the writer did not desire his or her name to be mentioned.

be crowded with persons desiring to obtain her Majesty's commission. Therefore the question arises, are these two functions, that, on the one hand, of the Institute, and that, on the other, of examinations, compatible? A consideration of this question must throw much doubt upon it. For the Institute differs from a profession such as that of the Bar, because no one except a barrister is allowed to plead for another in the courts of law; and, therefore, if a person wishes to adopt this profession he *must* belong to the Inns of Court, and, consequently, submit to their regulations.

But, desirable as it is for any one who practises the profession of an architect to belong to the Institute, there is nothing to prevent a man from designing a house for another, but without being a member of this body. It is just the same with the dentists to whom Mr. Whichcord alluded, unless a man is now a registered practitioner he has no legal standing as a dentist. Therefore the example of the dentists is of no value in regard to the Institute; and if there is one thing that men dislike more than another it is passing examinations, and some of the wisest men of the present day throw great and deserved doubt upon them as being evidence of real intellectual training. Now, we much fear that the consequence of having an examination for persons wishing to become Associates will be to keep down the numbers of the members, and consequently to give the Institute authority over fewer members of the profession than would otherwise be the case. If a man cannot pass the examination in order to be a solicitor, he tries again, because he cannot practise until he has received a certificate; but this does not apply to an architect, and, therefore, is there any reason to suppose that a large number of gentlemen who might not satisfy the examiners would not cease to try again; and is there any reason why, if the regulations are very stringent, architects might not erect another corporate body less exalted, it may be, but yet sufficiently numerous to lessen the good that could be done by the Institute? The Architectural Association is not a rival of the Institute, but the mere fact of its existence shows that the Institute's first aim should be to enlarge its boundaries and to take as many men as possible within its folds. But, on the other hand, you may have examinations so slight as not to terrify the most ignorant of practitioners, and then the question must at once be asked, Why establish examinations at all? Why parade a virtue before the public which you do not possess? Moreover, if examinations are necessary, it becomes at once an interesting question, What is the practical value of Bye-law 8 of the Institute Laws? Because, if the professional education of an Associate has not been satisfactory, he can be blackballed by those who consider his qualifications insufficient. Therefore there seems to be this dilemma: either the Institute must lose its influence over a number of the profession if the examinations are stringent, or if, on the other hand, they are mere forms, then, so far from being a credit to the Institute, they will in the eyes of the public be a mere piece of humbug, and in no way raise the general professional character of the architect.

R.

IMPROVEMENTS IN MANCHESTER AND SALFORD.

A century ago, Manchester was a comparatively small town, with a population of about 40,000; now it can boast of miles upon miles of streets, and has a population of 350,000. During the last half-century the improvements which the growth of the city has necessitated have completely changed the character of certain parts of the city and suburbs. The most important of the improvements lately carried out under the auspices of the Corporation has been the widening of Deansgate. This work has been several years in progress, and much of the land cleared still remains vacant, although (according to the *Manchester Courier* of the 12th inst., which contains a long article on the subject of improvements in Manchester and Salford) the Corporation has used every effort to dispose of it. The second part of the Deansgate improvement, dealing with property between Bridge-street and Knott Mill, is being pushed forward as rapidly as the leases of the houses which have to be demolished fall in. When finished, the new thoroughfare will be of a uniform width of twenty yards from Victoria-street to Bridgewater-street, Knott Mill,—a distance of about three-quarters of a mile. The new covered market at Knott Mill has proved a boon to the neighbourhood, and other improvements in the same locality are contemplated. Under a joint scheme, promoted by the Free Libraries Committee and the Markets Committee, a new free library is about to be established on a site between Tonman-street and Liverpool-road. The ground floor will be set apart as shops, and the reading-room and library will be on the upper floor. The Free Libraries Committee have undertaken to hand over to the Markets Committee the sum of 11,000*l.* as their contribution towards the cost of the work, and tenders for the erection of the building will shortly be invited. The premises in King-street, formerly occupied by Messrs. Bird & Hull, cabinet-makers, have been demolished, and direct communication effected between King-street and Charlotte-street and other adjacent thoroughfares. The effect of this improvement will be to relieve the traffic in other thoroughfares considerably, and a new route will be established between St. Peter's-square and the Exchange. Another improvement in this part of the city has been the widening of Spring-gardens, and the extension of the thoroughfare into Fountain-street. The much-needed widening of Tib-street, from Piccadilly to Thomas-street, has been effected during the year. In Market-street and other leading thoroughfares large buildings, intended for shops and warehouses, have taken the place of old structures. According to agreement entered into with the Corporation, the Cheshire Lines Committee have widened the greater portion of Lower Mosley-street to the extent of four yards. The Cheshire Lines Committee have, also by arrangement with the Corporation, increased the width of Watson-street, and continued the thoroughfare into Bridgwater-street. It is the intention of the Corporation to widen Mount-street and Windmill-street in order to improve the approaches to the new Central Station. Eventually all the buildings between the Windmill-street end of Mount-street and Lower Mosley-street will be demolished, and the latter street will run straight through into Lower Mosley-street, thus opening a direct route from the City-road to Albert-square and the Exchange. The Central Station is fast approaching completion. It is roofed in, and the glaziers and painters are now at work upon it. The new loop line, running from the Central Station through the south-western suburbs of Manchester, and round to London-road Station, has been recently opened for traffic. Besides facilitating the traffic between Manchester and Stockport, a saving of time will result from the opening of the line to persons living in the vicinity of any of the stations who may have occasion to go to Liverpool or any other place reached by rail from London-road Station, and the inconvenience of having to cross the city from the Central Station to the London-road Station will be obviated. The new Manchester South District Railway is now completed, and will be opened on the 1st of January. Through communication will be afforded by this line between Manchester Central Station, London, Derby, Birmingham, and all places covered by the Midland system. On the other side of Manchester, the Lancashire and Yorkshire Railway Company have provided increased accommodation in the shape of a new line to Cheetham-hill, Prestwich, Radcliffe, Bury, Bacup, Bolton, Preston, and other places on their main line. The London and North-Western Railway Company are duplicating their existing double line between Ordsall-lane, and a large number of workmen have been for some time past engaged on the work. The extension of London-road Station is being pushed forward with all despatch. The new street forming a part of Fairfield-street, and running from London-road alongside the new station, is completed. The new wholesale fish-market in Shudehill, which was opened on June 3, has proved to be well adapted for the purpose for which it was designed. It covers an area of about 2,000 square yards, and adjoins the old market, the front facing High-street. There are two large bays, each 45 ft. wide, and the roof is supported by cast-iron columns. Messrs. Mangnall & Littlewoods were the architects, and the contract was let to Messrs. Robert Neill & Son for 15,200*l.* On the 22nd April a new gymnasium, erected on the ground in front of Owen's College at the Burlington-street side, was opened. During the year the baths and washhouses in Leaf-street and Mayfield-street have been acquired by the corporation, and have undergone considerable alterations and repairs. The construction of the tramways throughout the city is about to be commenced. The corporation have power to lay down forty miles of tramway. The first section dealt with will include Mosley-street, Piccadilly, to the city boundary, Gray-street, Stockport-road. Double lines will be put down throughout the entire distance, the length being about a mile and three-quarters. From Gray-street a single line of rails will branch off, and run to the city boundary in Albert-road, a distance of a quarter of a mile. Another line will run along the Hyde-road to the city boundary at Gorton, and there will also be a line laid down in Fairfield-street, leaving the main line in London-road, and proceeding along the Ashton Old-road. The southern portion of the tramways will next be laid down, the routes including Mosley-street, City-road, Stretford-road, and the other principal thoroughfares on the south and south-east side of the city. Connexions will be established with the different suburban tramways. The system adopted is Gowan's patent.

Salford.—Though much has been done in the course of the last twelve months by the corporation of Salford in the matter of public improvements, the work carried out will not compare in magnitude with that effected in previous years. Nearly all the more ambitious plans that were sanctioned by Parliament when the last Improvement Bill was granted have been brought to a successful termination. The Blackfriars extension, and the widening of New Bailey-street, which involved the purchase and pulling down of a good deal of tumble-down and dilapidated property, together with the erection of the Trafford Bridge, are accomplished facts. There still remains much to be done in the shape of works of a smaller and less expensive character. There are yet two bridges to erect, tramways to lay down, and private street improvements to make. In all these respects, with the exception of the last mentioned, the corporation are making steady progress; but in regard to the private street improvements, the cost of which, of course, falls upon the property owners, little has been done, the council desiring to deal as lightly as possible in these times of depressed trade with private individuals. Although nothing has at present been done in the matter of the prevention of floods in the Irwell, sanitary affairs generally appear to have been well looked after. The intercepting sewer is now completed, and it has rendered necessary a good deal of detail drainage, the effect of which is that many of the sewers that formerly discharged their contents into the river are now connected with the intercepting sewer, and consequently to that extent the Irwell may be considered a purer stream than it formerly was. Good progress has been made with the sewage works at Mode Wheel, and it is anticipated that they will be finished by the end of next year. The sewage will be dealt with by precipitation, for which a series of six tanks in duplicate will be provided. The sewage will be pumped into these tanks, and there clarified, this process rendering it sufficiently pure to warrant its being discharged into the Irwell without fear of causing a nuisance or of further polluting that river,—already too well known as "the Inky Irwell." Several new police-stations have been erected. One in Great Cheetham-street is now in use, while a second in Moor-lane is finished, ready for occupation, and a third in Cross-lane is approaching completion. The Corporation are building baths in New Blackfriars-street, which are expected to be ready in the Spring. In West Market-street, Bexley-square, new offices have been erected for the purpose of relieving the town-hall. The Eccles Old-road tramway has been completed and opened for traffic. In order to avoid annoyance and inconvenience caused to gentlemen driving carriages by the wheels getting into the hollows formed by the stone setts on each side of the line, blocks of furnace-slag have been used instead of stone-setts, and as they form a perfectly level surface, are of a uniform size, and are laid upon a concrete bottom, the difficulty previously experienced would seem to have been effectually overcome. In the course of the ensuing year additional lines of tramway will be laid along New Blackfriars-street, Great Clowes-street, Broughton and Lower Broughton-road, as far as Broughton sprout; from the Woolpack Inn, Pendleton, along Bolton-road to Irlams-o'th'-Height, where it will be joined by a line in course of construc-

tion by the Manchester Suburban Tramways Company, in the Swinton Local Board district. In the case of both these lines the furnace slag will be used, and a further improvement will be introduced in the shape of steel-faced instead of iron-faced rails. The Wallness Bridge, which is to form a communication from lower Camp-street, Broughton, into Pendleton, is in course of construction, and the contractor for the masonry work, Mr. Pilling, is making satisfactory progress. It is expected that when completed this bridge will greatly relieve the traffic along Broad-street, the Crescent, the Adelphi, and Chapel-street, as it will open up a shorter and much more convenient route into the whole of the Broughton district. The bridge is to have a span of 140 ft. and a width of 54 ft. Quarries in Westmoreland will supply the granite for the abutments. For the purpose of making provision for the anticipated traffic over the bridge, the Broughton District Highway Committee have acquired land and property with the intention of widening Lower Broughton-road very considerably. The abutments of the Springfield-lane Bridge are nearly finished, and the ironwork is in course of construction. It is hoped that by Midsummer the bridge will be opened, and in this case also it is intended to widen the thoroughfare to meet the requirements of the expected increase of traffic. The Highfield reservoir, which has been in course of construction for some time, has been completed and is ready for the admission of water, of which it will hold between 7,000,000 and 8,000,000 gallons. Not the least of the improvements at present being effected under the supervision of the borough engineer, Mr. A. Jacob, may be mentioned the complete re-survey of the township of Pendleton, on a scale of $\frac{1}{528}$, or 10 ft. to the mile, which equals 44 ft. to the inch. The township, including Pendlebury detached, and which is embraced in this survey, has an area of about 2,560 statute acres, and the draft plans embrace eighty-nine sheets of double elephant paper, each sheet having 3 ft. by 2 ft. of drawn work upon it. On the recommendation of the Gas Committee, the council voted 160,000*l.* for the extension and improvement of the gasworks. A combined air and water tank condenser, of a new and economical construction, and other necessary apparatus, have been erected. A tank, 154 ft. in internal diameter and 40 ft. deep, and a telescopic gas-holder, 151 ft. in diameter, capable of holding 1,400,000 cubic feet of gas, have been built at the Liverpool-street works. Several other additions are in progress, including a retort-house capable of producing nearly 750,000 cubic feet of gas every twenty-four hours, and a boiler-house for three 40-horse power boilers. The gas mains have been considerably enlarged, and from the Lamb-lane works to the Liverpool-street works a 1 ft. 6 in. pipe has been laid.

The foregoing summary will suffice to show that the municipalities of Manchester and Salford are alive to the importance of keeping abreast of the times.

ARCHITECTURE AND PUBLIC IMPROVEMENTS.*

SINCE our last year's number was published, the largest building now proceeding in this country has been partially completed and thrown open for occupation. The portion of the Law Courts now in use was completed externally last year, and we then commented fully upon its architectural aspect, so that it is unnecessary to repeat any remarks upon its architecture. It is sufficient to say that, so far as it is now in use, it appears, on the testimony of those who have to use it, to be more practically satisfactory than was anticipated by many who judged from the forbidding and monastic appearance of the exterior of the structure. So far this is matter for congratulation, though it can hardly be hoped that the building will ever be accepted, when complete, as a realisation of the best possible ideal of Law Courts.

Another great building, the exterior of which has been for some time complete, and familiar to visitors in the neighbourhood of South Kensington, is now also nearly complete internally, though not yet open to the public. Externally the Natural History Museum is hardly a building to command very much admiration as a whole; it is somewhat heavy, and has the additional disadvantage of standing too low, and, in fact, almost in a hollow, below the level of the adjoining roadways. There are, however, very admirable points of detail in the exterior, and the central entrance doorway, with its deep recessed arch and rich sculptural decoration in terra cotta, is a very fine feature. But when the public are admitted into the completed building, they will find themselves brought face to face with a very novel and successful application of special materials, and of a type of architectural design which has not in any other modern building been treated on anything like this scale. The whole building is practically, to begin with, a remarkable and valuable example of the application of terra cotta as an architectural material. In the interior this is carried out with highly decorative effect, numerous designs in bas-relief being introduced of an appropriate character, and having all some relation to the purpose of the building, and in most cases admirably modelled. But the architectural importance of the interior really consists in the fact that it is a new and most effective application to modern architecture of the phase in the history of arched architecture which is generally known as "Romanesque," and which may be defined as architecture in which the Gothic or Mediæval spirit has been largely developed, but previous to the introduction of the pointed arch. This interesting and very solid and imposing phase of architecture has been copied occasionally in modern times; that is, simply reproduced in its ancient form. But Mr. Waterhouse has done more than this. He has made out of the materials suggested by the old Romanesque style an architecture quite modern in feeling, and completely suited to the purpose of the building and to the material in which it is executed. Entering through the principal door, we come into a great hall, which forms the central feature of the interior, and which is lighted from an arched roof. On each side are deep, heavy, arched recesses, with special light of their own, and which are intended for the arrangement of special classes of objects; while the objects of more interest, which present no hint for special classification, are arranged in the centre of the floor. At the further end of the hall rises a staircase, leading to open galleries, which run along each side of the hall above the arched recesses before named, and by these galleries we return again to the entrance end of the hall and the staircase which leads to the higher level of the first-floor galleries of the wings of the building. This staircase is carried over the hall on a great semicircular arch the whole width of the hall,—a treatment which produces the most picturesque effect, both from above and below, and is one of the finest points to be found in any modern building in the country; and the whole of this portion of the interior is full of fine effects of architectural perspective and composition. All the details of the internal architecture have been most carefully considered, and are all artistic and pleasing, without costliness or over-elaboration; among other things, the treatment of the windows is remarkably successful. It is unfortunate to have to add that the architect of the building,—a practical man as well as an artist,—has been thwarted in one of the best and most practical features of the plan of the building by official interference. In order to render the collection of objects conveniently available for scientific study as well as for popular edification, Mr. Waterhouse had contrived private corridors running between the larger halls into which the public would be admitted, so arranged that the cases containing objects of special interest to scientific students should be accessible from the back from these corridors, and capable of being opened for close inspection and study under proper control, while the cases on the side towards the public rooms would be always closed under glass. Nothing could be more practical and useful, apparently, than such an arrangement, which, however, has been countermanded, for the present at all events, for unintelligible reasons, though there is still the possibility of carrying it out in the future.

The present year has also seen the completion of a very large and important work, which is not, like Mr. Waterhouse's building, a modernised adaptation of an old style, but a complete reproduction of a Mediæval form of building in Mediæval style: we allude to the new cathedral at Edinburgh. It would be out of place here to discuss the question of suitability of building cathedrals at all at the present day, when the Church occupies so different a place in reference to the life of the nation from that which it occupied when the Mediæval cathedral grew into being: our readers will have their own opinions on that subject. It must suffice to chronicle the fact, certainly an architecturally important one, that a large cathedral has been completed in a remarkably short space of time,—a cathedral emulating in size and architectural magnificence some, if not all, of our genuine Mediæval cathedrals, and designed by the architect who unquestionably knew more of Gothic architecture than any other modern architect; who had, in fact, studied it so that it had become almost a second nature with him, and who, if his life had been spared, would have seen with peculiar satisfaction the completion of an entire modern cathedral from his own designs, after he had been so many years of his life occupied in restoring ancient cathedrals. The cathedral is in that Early English, or "Lancet" style, for which Sir G. G. Scott had a peculiar affection, and which combines solidity with grace in a more balanced form than perhaps any other style of English Gothic architecture. The cathedral has a centre tower with a fine spire; the nave consists of seven bays, with cylindrical and octagonal piers alternately; and the choir of four bays, with piers formed of clustered shafts. The nave is divided from the transepts by a screen of alabaster, enriched with inlaid panels and coloured marble shafts; the choir aisles are shut off by ornamental iron grilles, decorated with gilding; the choir is furnished with carved walnut-wood stalls; a considerable amount of stained glass, rather various in quality, has been placed in the windows, partly the gift of private individuals; an organ, by Willis, is in course of erection; and a peal of ten bells, by Taylor, of Loughborough, will be placed in the tower. This is a great change from the days when stained glass, organs, and all such vanities would have been scouted on Scottish soil as inconsistent with true devotion. While speaking of Edinburgh, it may be added that a great deal of rebuilding is going on in the city, which almost necessarily includes the removal and rebuilding of many of the high, blackened, picturesque old houses which gave so much of its peculiar character to the city, though they were certainly completely out of keeping with the title of "Modern Athens," which had been rather too hastily bestowed on Edinburgh. It is impossible not to regret the demolition of many of these old streets and "wynds" from the artist's point of view; but no one who has adequate ideas on the sanitary condition of the city can feel otherwise than that their removal was an absolute necessity.

Another piece of work which has been in progress during this year, and with which also the name of Sir G. Scott is connected, is the restoration of the north transept porch of Westminster Abbey. Though a far smaller work than the new Cathedral of Edinburgh, the great national interest of the building renders any alteration or restoration in any part of it a matter of importance. The north porch, which had been called "Solomon's Porch" in old days (in allusion to its special richness and elaboration), had been overlaid by later and very inferior work; but enough traces of the original work have been found to enable an architect so learned in Mediæval detail as Scott to restore the whole design on paper, and considerable progress has been made during the last few months in carrying out the work *in situ*. It is, of course, idle to say that this is the same thing as having the original work back, and if there were any at all proportional merit in that with which it has been overlaid it would have been wiser to have left the latter, as being at any rate real and historical work. But the late work was in fact architecturally weak and worthless to a degree, and it was far better to have even a copy (for it is little more than that) of the original design than to have the portal left in the meagre and despoiled state to which it had been reduced in an age when Mediæval architecture was not in the least understood. The design, when its restoration is completed, will show the three doorways, the centre and two side ones, with their deeply-recessed arches filled with rich carved ornament, and the wall space between the centre and the side arches decorated with niches and figures. The completion of the whole will necessitate the lowering, probably, of the level of St. Margaret's churchyard, now considerably above the floor of the Abbey: another illustration of the constant

* From the "Companion to the Almanac for 1880." The Company of Stationers, Ludgate-hill. See p. 1407, *ante*.

tendency to the raising of the ground-level wherever ground is much disturbed in the restricted spaces of a crowded city.

Having touched upon some of the last architectural works of our late distinguished and successful architect, it may be not out of place to allude to the appearance of the volumes containing his "Personal Recollections," edited by his son, as an event of some interest in the architectural world. There is a great deal in these volumes that is of considerable interest in the description of Scott's early studies and recollections, and of the state of architectural taste, or rather the entire absence of any such taste at the time when he commenced to learn the profession. It must be confessed, however, that a good deal of the latter portion of the book is taken up with accounts of architectural polemics of various kinds which have no longer (if they ever had) any interest for general readers, and that the publication of the "Recollections" has not on the whole operated advantageously to the memory of the distinguished church architect.

The general course of architectural work during the past year can hardly be said to have shown any special movement or advance in one direction or another. Perhaps in London the most marked characteristic has been the development of a love of red surfaces, shown either in the revived brick style called after Queen Anne, or in the deliberate painting over in strong red of many houses and parts of houses of the old cement type. We certainly want more colour in our streets, and perhaps this rather crude beginning may lead the way to a more thoughtful and artistic development of colour in our street architecture. In other respects town architecture seems to go on pretty much in the same groove in which it has recently been travelling; the more commonplace buildings taking the usual forms of "Italian," which have long been consecrated to town architecture in the eyes of those who may be called regulation architects, while those who aim at artistic effect have been continuing to play variations on the Queen Anne string, leading to the production sometimes of some piquancy and novelty in detail, and certainly of a great deal of costly and beautifully-executed brickwork, which, as improving the character and the standard of work, is in itself a gain. We may mention some few of the works which seem most to call for notice in London and elsewhere.

Among other things, it cannot be overlooked that the class of building known under the title of Restaurant has assumed lately an importance socially and architecturally which it never had before. It has become, in fact, a kind of club for the million, and is fitted up with a degree of luxury and show which many clubs would be as unable to emulate in costliness as they would be unwilling to imitate them in style. The "Criterion," which was the first of these large establishments, has been recently enlarged, and a new establishment of this kind has been completed this year under the title of the "Gaiety" Restaurant, in connexion with the theatre so named. The elaborate and showy decorations of these buildings, though by no means free from vulgarity and ostentation (which cannot be wondered at when it is considered that they are more or less of the nature of advertisements), are at any rate very greatly in advance, in point of taste, of anything which it was formerly thought necessary to place in buildings of this class; and so far we may note an advance, though of a rather doubtful kind,—the tile and other decorations for ceilings and walls, in these buildings, erring in fact rather on the side of attempting too much and producing the impression of art-decoration turned out by machinery, than which nothing can be more opposed to true taste. Mr. Verity, the architect of the "Criterion," whose name has now become connected with buildings of this class, also designed and superintended its more recent successor in the Strand.

The buildings in connexion with the new Northumberland-avenue do not seem, so far, to promise anything out of the common run of the more costly description of street architecture; the Grand Hotel, now externally completed, has no features to distinguish it from many other buildings of the same class. The necessity for making the most of every foot of the ground compelled, we are told, the employment of an unbroken mass of frontage without projections or recesses; but it is surely time for architects to consider whether they cannot adapt themselves to circumstances, and achieve picturesque appearance under such drawbacks, by some other method than falling back upon the hackneyed resources of worn-out Italian details. Mr. Gibson's building for the Christian Knowledge Society, on the other side of the same street, though somewhat heavy, and also made out of well-worn details, exhibits a successful attempt to gain variety of surface and grouping by the large recessed arches on the upper story, and the effect of the whole building is dignified, though cold. If we may judge from published illustrations, the new building for Drummond's Bank, in course of erection at Charing-cross, will do nothing to relieve the heaviness of the new architecture of the locality. It will, no doubt, be a building practically suited to its purposes, for its architect, Mr. Hardwick (consulting architect to the Bank of England), has much experience in such buildings; but, artistically speaking, it appears the most absolute common-place of architecture, without a single feature of novelty or interest.

One of the finest and most successful buildings coming under the head of commercial architecture which has been completed during the year is Mr. Waterhouse's building for the Prudential Assurance Company in Holborn. This is noteworthy as one of the few recent instances of a large building in the Gothic style, which has now so nearly given place to the various species of what may be called "bastard Classic." Mr. Waterhouse, however, is not one of the architects blown about by every wind of fashion, and he has given us in this building one of the best specimens of that style of Gothic, a little deficient in *verve* and picturesqueness, but nevertheless very refined, which he has elaborated for himself on the basis of early French Gothic. The building is also a remarkably good instance of workmanship in rubbed and cut brick and terra cotta, and is in every way a valuable addition to London street architecture.

The Paddington branch of the London Joint-Stock Bank, by Messrs. Isaacs & Florence, is a building showing considerable originality as well as suitability of style, as might be expected from the fact that the junior partner in the firm is well known as one of the cleverest draughtsman and designers of the younger generation of architects. Some of the best works of the year in London, however, have been in the class of warehouse and manufactory building, which has ceased to be necessarily mere bricklayer's work. The new warehouses in Southwark Bridge-road, for Messrs. Petty, Wood, & Co. (Messrs. Roumieu & Aitchison, architects), may be mentioned as a large and striking building of this class, showing, however, more force than refinement of detail. A smaller building for a bookbinding establishment in White Hart-street, Strand (Messrs. Clarkson, architects), is an excellent specimen of simple and practical treatment of a building of this class. The Leather Exchange at Bermondsey may be mentioned, though a building of no very special character; but the London Leathersellers' Company have set an admirable example in the way of architectural decorative art in the new iron gates to their hall, in St. Helen's-place, which are entirely hand-wrought in every part, without castings or any mechanical appliance whatsoever. It is only by work of this kind that anything can be produced worth calling decorative art, which in modern days has been nearly killed by machinery. The work was done from the designs of Messrs. Wilson & Aldwinckle, the architects to the Company. A good deal has been in progress this year in the way of what may be called City architecture: among which, the Manchester Hotel, in Aldersgate-street, may be mentioned, as one of the most important, and perhaps, also, one of the most successful, recent buildings in the City neighbourhood, and which is also noteworthy as one of the few buildings lately erected in the Late Gothic style. But, in general, it cannot be said that new architecture in the City shows any very original features. That venerable institution, the Bow-street Police-court, is coming out in a new dress; but neither will this exhibit any definite character, and it might as well be a club as a police-court. A more important building is "Temple Gardens," the new block of very showy building which has lately been erected at the end of Middle Temple-lane, and which has been carried out under rather peculiar circumstances, as the site was the property partly of the Middle Temple and partly of the Inner Temple, and the two societies, both wishing to build, agreed to adopt the same style of building; and eventually what was at first to have been two buildings, was compressed into one, and Mr. E. M. Barry, the architect to the Benchers of the Inner Temple, was entrusted with the entire external design; he and Mr. St. Aubyn, who was engaged on behalf of the Middle Temple, being each responsible separately for the internal arrangement of his own half of the building. . . . . .

Among buildings which claim a word of notice are those which are erected for exhibitions, of which our colonial friends at Sydney have produced a large specimen for the exhibition which is now open. The building presents nearly the usual features of erections of this class; the central dome appears to be well treated, and though the whole building seems, from the illustrations transmitted to us, to be plain enough, there seems no indication of such exceedingly flagrant and flaunting taste as was displayed in many portions of the Paris Exhibition building. A Fine Art Exhibition has been built at York, also; this, however, is not a temporary, but a permanent structure, and though there is nothing out of the way in the architectural detail and treatment, the amount of sculpture introduced will, when completed, and if of good quality, give a certain degree of special interest to the building, and it appears to be well and effectively grouped on the façade. Among other works of interest which have been in progress in the provinces, may be mentioned the new town-hall for Great Yarmouth,—a picturesque application of details borrowed from Elizabethan and Jacobean architecture, and rather happily assimilated by the architect, Mr. J. B. Pearce. The competition for this building was one of some importance, and brought out a good many good designs, of which the selected one may be said to be one of the best in keeping with the style and general aspect of the town. In Liverpool a new club has been opened in the early part of the year, under the title of the "Reform," the building for which shows a considerable amount of originality, in a design that is Classic in feeling, but treated mainly in brick, with considerable refinement of design and execution, though a little heavy. New street-architecture has shown much development in this large town, and much of it is of a very high character; and an important building has also recently been opened under the title of the Picton Reading-room (named after an eminent citizen of the town), which takes the now unusual form of a circular Greek colonnaded building, and has a graceful effect between two masses of square building (the Free Library and the Art Gallery), which abut on it at different angles. Mr. Waterhouse's new hall for Balliol College, Oxford, is a good specimen of modern Gothic, with some specialities of treatment, and very appropriately designed to express its purpose; and the private chapel at Eaton Hall (the seat of the Marquis of Westminster), by the same architect, is another specimen of modern ecclesiastical architecture of a very satisfactory type from a certain point of view, and which, in style and dimensions, rises almost to the dignity of a church, having attached to it, but nearly detached from the building, a lofty and powerfully treated tower, in which is hung a carillon peal by the celebrated bell-founder of Louvain, Van Aerschodt. The tower presents a kind of mixed derivation in style, the details being Gothic, but the main design partaking of the Italian campanile character, a lofty and nearly straight-lined stalk without buttresses, carrying an over-sailing clock stage, which is surmounted by a short and graceful spire. The very active and rising town of Barrow-in Furness has supplied itself with a Town-hall of large dimensions and admirable design, by Mr. W. H. Lynn, an architect of real genius, both in planning and designing, and whose treatment of the central tower especially of this Town-hall deserves, and will probably receive, much admiration. The building of asylums has been a feature in provincial architectural work; the proposed new County Lunatic Asylum for Gloucester gave rise to a large competition, in which a good many very admirable plans were submitted; and the Lincoln County Hospital may be mentioned as a building in which the practical requirements of planning, &c., in a building of this class have been very successfully combined with picturesque outline and effect in a manner perfectly suitable to the occasion. A small building, the Stephenson Memorial Hall at Chesterfield, ought not to be passed over, on account of

the interest attaching to the name of the great engineer to whose memory it was built, in sight of the house in which he died. The building comprises a public hall and rooms for educational purposes, and is a quiet-looking design of Domestic Gothic character, appropriate enough for a building of that class for a comparatively small town.

It would be impossible to say that the year 1879 has been marked by any peculiar or definite step in architectural style. It may be readily observed that the decline of interest in revived Mediæval architecture has taken no turn, and that Mediæval buildings, not long since the rule, are now the exception; and the style which is founded on revivals of Jacobean and Queen Anne architecture, though increasingly prevalent, has not yet shown any symptoms of leading to the development of a new Classic style, as many of its adherents have predicted it would; on the contrary, it appears to consist still of mere copying, and the copying of bad and corrupt detail, which can from no point of view be called artistic. Among some of those who have given themselves to this manner of architecture, however, there is evident a wish to produce characteristic architecture suited to its purpose, which, on the whole, more recommends itself to us than the cold and bare classicisms, without colour or character, with which so many architects of clubs, banks, and public institutions are still content. It is impossible, of course, that modern architecture should sever itself from or forget the past,—some copyism and reproduction the most original building must show; what we feel more especially is the want of direct attempts to deal with special problems in a special way; the perverseness with which, when a building has to be erected the conditions of which in regard to site, materials, and requirements really give every suggestion for specialty of treatment, all this is ignored and the special qualities of the building are stupidly hid away behind a mask of regulation pilasters and such-like architectural furniture. What is above all required is that architects should be induced to take the trouble of thinking out a problem for themselves, and resolving it in what is really the best and fittest way under the circumstances. Till we can get a large proportion of the best-educated of our architects to take this course, instead of flying to old and unsuitable types of design, merely to save themselves trouble, there will be no real architecture among us. There is little enough at present, and the few refreshing instances only serve to intensify our impression of the general weakness and insufficiency of the architecture of the day.

COST OF WOOD-PAVING IN CHELSEA.

AT a recent meeting of the Chelsea Vestry, the surveyor presented a return, showing the cost of, and other particulars in connexion with, the laying of 31,333 yards of wood pavement in King's-road, Sloane-square, Sloane-street, and Cadogan-place North, for which purpose a loan of 18,000*l.* was obtained:—Total expenditure, 17,260*l.* 11*s.* 2*d.* Repayments, viz.,—from Gas and Water Companies for reinstating trenches, sale of materials, and other receipts, 118*l.* 12*s.* 2*d.*; nett cost of works, 17,141*l.* 19*s.* The nett cost of the pavement only (including superintending) has amounted to 10*s.* 5¼*d.* per yard super. The estimate was 11*s.* 3*d.* The lowest tender for the works in question was 12*s.* 6*d.* per yard, consequently the actual saving effected by the Vestry undertaking the work amounts to 3,160*l.* 11*s.* 4*d.*, without making any allowance for the concrete and grout being in Portland cement instead of lime. The works generally consisted of a 6-in. bed of Portland cement or concrete, upon which were laid yellow deal blocks, 9 in. by 6 in. by 3 in. The blocks had each three iron studs driven into them to keep them in place until the grout had properly set. The joint, which is ½ in., was filled in with grout composed of Portland cement and sand. 6,392 loads of old macadam were screened from the excavation, carted from the works, and used in repairing various streets. The unexpended balance of loan amounts to 858*l.* 1*s.*, but it is probable that about 100*l.* will be required to fill in the side margins with grout, as soon as the expansion of the wood has ceased. The estimated value of the plant and materials in stock at the Vestry Wharf No. 1 amounts to 100*l.*

ARCHITECTURAL ASSOCIATION.

AT the second meeting for the present session, held on Friday, the 19th inst., Mr. S. Flint Clarkson, president, in the chair,

Thirty new members were elected, viz., Messrs. Charles Dunch, Herbert Hooton, H. P. Hogg, W. Toogood, F. W. St. Aubyn, H. W. Moxon, J. C. Carter, F. Clemence, E. J. Andrew, M. W. Maylard, W. N. Ashbee, R. D. Reeve, L. Barton, J. Crocker, G. G. Warren, H. Lambert, G. S. Stephenson, H. W. Crickmay, F. G. F. Hooper, A. E. Newth, W. A. Pite, A. B. Pite, E. Hodges, H. W. K. Martin, T. J. Holland, G. W. Jones, R. Turner, G. P. C. Fyfe, H. T. Clark, and A. E. Westover; and thirty-six gentlemen were nominated for election at a future meeting.

On the motion of Mr. R. C. Page, votes of thanks were given to the Council of the Royal Institute of British Architects for lending their rooms to the Association on the occasion of the opening *conversazione*; to Mr. Boyd for placing the Museum of Building Appliances at the disposal of the committee on the same occasion; and to the entertainments sub-committee.

The President announced that, as usual, most of the architectural students' prizes at the Royal Academy had been won by students who were members of the Association. In the Baptistery competition the gold medal was won by Mr. F. T. Baggallay, and in the same competition a medal of merit was won by Mr. J. H. Ince. The Academy travelling studentship in architecture was gained by Mr. R. W. Gibson, for his design for the town-house of a royal prince. All these gentlemen are members of the Association.

The librarian, Mr. Hampden W. Pratt, announced several donations of books to the library, the donors being Messrs. Edwin Nash, D. G. Ebbetts, Mark H. Judge, — Buckler, and Bowes A. Paice. It was also announced that Mr. George Godwin had, in pursuance of the promise contained in his letter read at the Association's *conversazione*, presented thirty-eight volumes treating of various phases of art and construction. On the motion of Mr. Pratt a hearty vote of thanks was given to the several donors.

Mr. Cole A. Adams then read a paper entitled "Common Sense in Architecture." This we print on p. 1426.

In the discussion which ensued,

The President observed that "common sense in architecture," as it had been treated of by Mr. Adams, might be defined as consisting in the choice of the best course in the pursuit of architecture as a profession,—a very desirable aim in the abstract. But there remained further questions as to whether all the things recommended by the author of the paper in the name of common sense were desirable in themselves, and some of those questions would doubtless be raised in the course of the discussion.

Mr. Gilbert R. Redgrave said that just as some people would say, "Orthodoxy is *my* doxy, heterodoxy is anybody else's doxy," so others said, virtually, "Common sense is *my* sense or opinion, and anybody else's opinion, unless it happens to agree with mine, is not common sense." Although Mr. Adams had not exactly defined common sense, he had given some very well-chosen illustrations upon points in which the absence of common sense was very easily seen. Common sense in the elevation of a building, common sense in the planning of it, and common sense in the use of it, were all touched upon in the paper. That common sense did not always prevail in meeting all the requirements of a building was very amusingly illustrated in a story, told in Walpole's "Anecdotes of Painting," respecting an architect of the Earl of Burlington's time. The architect, it was said, built a house the elevation of which was exceedingly good, but the interior was so bad that the gentleman for whom it was built could not live in it: so he took a house opposite to it so that he might be able to live in comfort and be able to gaze on the beautiful façade of the uncomfortable house. He (Mr. Redgrave) agreed with much that had been said by Mr. Adams as to common sense in church architecture, but while it was necessary, and, indeed, desirable, to make adequate provision for the comfort of the congregation, there was a higher sentiment to which, to a certain extent, common sense and strict utilitarianism must sometimes be sacrificed.

Mr. John Sulman said it too often happened that the cry for "common sense in architecture" came exclusively from those who prided themselves upon being strictly "practical men,"—very good men in their way, no doubt, but men who only saw half the truth. On the other hand, there were men in the architectural profession who were artists pure and simple, and who paid little heed to common sense in planning or construction. In church architecture especially, some architects were, perhaps, rather too apt to put architecture first and common sense second. But what was wanted was neither of those two extremes, but the mean, and the mean was apparently very difficult of attainment by one and the same man. That opened up the question whether it should not be the aim of the members of the profession generally to become good average "all-round" men,—men who would not give undue preponderance to construction and planning, to the detriment of art; neither, on the other hand, making art supreme and ignoring common sense in construction. With reference to the architecture of churches and chapels, he happened to come very much in contact with a class of people,—viz., Nonconformists,—who laid a great deal of stress upon common sense in matters of convenience and comfort in the arrangement of their chapels; and he believed that, as a general rule, much more regard was paid in Nonconformist chapels to the comfort of the congregations than was shown in church architecture. The reason for that he believed to lie in the fact that church architecture was too much hampered by tradition. On the other hand, the various Nonconforming bodies had no architectural past, and architects who were engaged in providing places of worship for Nonconformists had better chances of combining comfort with architecture, because freer from precedent than church architects. A good illustration of what he meant was afforded by Union Chapel, Islington [Mr. James Cubitt, architect], visited by the Association a few years ago. Mr. Redgrave had referred to the higher sentiment in church architecture, but there was no reason why that sentiment need be interfered with by studying comfort. As to the question of successive "revivals" of style, those revivals were certainly not in accordance with common sense. We were not Greeks, and lived neither in Mediæval times nor in the reign of Queen Anne, nor were our thoughts, manners, and customs those of any of those ages. He could not help thinking that if architects were to take up their work on a more practical, common-sense, or vernacular basis, they would be able to give better and more original expression to the buildings which they erected to meet our nineteenth-century wants, and the need for revivals would cease, because we should have a style belonging to our own age. He failed to appreciate the force of Mr. Adams's *dicta* as to graining, either on the ground of durability or on that of its alleged happy quality of "going well" with furniture and other things. He fully agreed with what Mr. Adams had urged as to the necessity of practical training for architectural pupils, and it had often occurred to him whether it would fall within the scope of the Association to form technical classes for the instruction of its members in actual practical work. But nowhere than actually on buildings in progress could the young architect gain a proper knowledge of construction, and it was the duty of principals to allow their pupils all reasonable facilities in that respect.

Mr. Audsley said he, like the last speaker, could not sympathise with Mr. Adams's plea for graining.

Mr. Aston Webb said that perhaps the *acme* of common sense in architecture was very uncommon sense, and was attained to only by those men of genius who were able to combine beauty in design with a thorough knowledge of construction and utility of planning. Common sense, it seemed to him, was as necessary in the art portion of the building as in the practical portion. He thought it a most fortunate thing that the church architecture of England had its traditions. As to the greater discomforts alleged to prevail in churches than in chapels, he thought that church architects were not altogether oblivious of their duty in that respect. As to the training of architectural pupils, he agreed that more attention should be given to the practical details of construction, but, at the same time, he thought too much was being made of this question of educational facilities, for a young man in an architect's office in the present day would have plenty of opportunities,

if he were disposed to use them, not only to examine and study the drawings and correspondence of the office, but to go on the buildings in progress and to go through the builders' workshops. It was, perhaps, hardly wise for architects to twit each other, in the face of the public, on their want of common sense. As a matter of fact, he believed that architects now paid more attention than ever to practical details.

Mr. W. Hilton Nash said a striking instance of the want of common sense was afforded by the rectory-house at St. Alban's, designed by a gentleman who, though not an architect, prided himself upon his knowlege of what was and what was not "common sense in architecture," and who had also written "a book on building." He (Mr. Nash) thought that the buildings of Paris, on the whole, exhibited much more common sense in design and construction than those of London. But common sense in architecture did not seem to increase with the enlightenment of the present age. In the days of the Normans much more common sense was often exhibited in construction than was exhibited in the present day.

Mr. Hugh Stannus said that he agreed with the author of the paper in thinking that the "Queen Anne" movement portended a revival of Classic architecture, but the question arose, When we have run through the gamut of all possible styles, what will be the result? He ventured to say that the present age, which was essentially an analytic and reasoning age, would in the end choose from each style its best elements, adapt them to present-day needs, and so produce a living style, in accordance with the doctrine of the "survival of the fittest." "Common sense," he thought, was that upon which every one was agreed. In Norman times, when there was not much enlightenment, it was easy to understand that there could only be one style of architecture. But in the present day, when individual liberty had become so developed, when individualism was allowed free scope, it was almost impossible to find any one point upon which everybody was agreed. But what ought to and what might be attained in architecture was reasonableness and fitness. He agreed with what had been said by Mr. Aston Webb as to the education of young architects. If a young man desired to become an architect, if he had a real burning desire to learn his business, there was nothing to prevent his doing so. But if, on the other hand, he were idle and apathetic, no educational facilities would avail. In fact, it was not so much a question of what the pupil was taught in the office, as it was of what he learned there.

The thanks of the meeting having been tendered to Mr. Adams for his paper, that gentleman said a few words in reply, and the meeting terminated.

The next meeting will be held on Friday, January 2nd, 1880, when Mr. R. L. Cox will read a paper on "Architectural Illustrations and their Classification."

THE NEW HAYMARKET THEATRE.

Within the last two or three months the Haymarket Theatre has been in the hands of the builders, undergoing an entire transformation. It has, in fact, been internally re-constructed, and may be practically regarded as an entirely new theatre. When the old house was handed over to the contractors, the first thing to do was to clear away the auditorium and the whole of the interior portion of the structure, the stage included, the main external walls only remaining. This having been effected, the work of reconstruction commenced. As is well known, the pit of the old Haymarket Theatre was one of the best in London, notwithstanding that the theatre itself is of comparatively limited dimensions, and was long popularly known as "the little Theatre in the Haymarket." In the reconstructed theatre this has been altogether changed, what has long been known as the pit having been entirely done away with, and a considerable portion of the space appropriated to the extension of the dress-circle, whilst the remaining part will entirely consist of stalls. In order to effect this, and bring forward the dress-circle, it was necessary to lower the floor, and this has been carried out to the extent of 2 ft., the floor level of the stage having also been lowered to a corresponding extent. By the new arrangement the dress-circle has been brought several feet nearer to the stage than that in the old theatre, whilst the upper-circle and a new amphitheatre and gallery above have been similarly constructed. This arrangement secures a much larger box space, as well as additional private boxes. It is understood that the amphitheatre is intended to be in lieu of the pit,—now converted into stalls, whilst the gallery behind the amphitheatre is very spacious, extending to the main boundary-walls. There is a wide promenade behind the dress-circle and crush-rooms, in connexion as well with the stalls. Whatever may be thought as to the abolition of the old traditional pit, which in the construction of modern theatres appears at present to be gradually being absorbed into the "stalls," the interior of the new Haymarket, structurally speaking, appears to afford facilities for a greater degree of comfort to the audience than did that of the former building. Another feature in the newly-constructed interior is in the ceiling, which has to a certain extent been increased in height. This has been effected by the introduction of cross-beams and girders in the place of iron columns, which has produced a much improved roof and ceiling. Additional attractiveness has likewise been given to the ceiling by alcoves carried round it. Several portions of the floors and other parts of the interior are fireproof, and in the reconstruction of the building the facilities for ingress and egress, now so rightly insisted upon in buildings of this character, have been attended to. The stage, as well as the auditorium portion of the house, has been entirely reconstructed under the supervision of experienced stage carpenters. The structural portion of the work is now almost completed, and the decorations, which are being executed by Mr. Bell, of Regent-street, are in progress. When finished, it is believed that the new Haymarket will be an elegant and compact theatre. It is expected to be ready for opening by the new lessees, Mr. and Mrs. Bancroft, early in January.

The theatre has been reconstructed from the designs of Mr. Phipps, architect, and the contractors are Messrs. Laing & Sons, of Duke-street, Adelphi.

THE BASEMENT VAULTS OF THE ROYAL EXCHANGE.

NOVEL CONVERSION.

The Gresham Committee have leased the whole of the spacious basement vaults under the Royal Exchange to the "National Coffee Public Houses Company," who are now engaged in converting the vast area into a huge establishment for the purposes of their business, from the designs of Messrs. Parr & Strong, of Finsbury-square, at an outlay of several thousands of pounds. In the first instance a new floor is being laid down, extending over the entire area, that portion of the centre which is called the great central hall, 110 ft. in length, and 56 ft. in width, being in parquetry. What may be termed the two aisles are being fitted up as private rooms for dining and other purposes connected with the business of the establishment. These rooms are thirty-three in number, there being twenty on the north side and thirteen on the south side, and the average dimensions of each room are about 13 ft. by 10 ft. They are entirely divided from each other by partitions carried up to the crown of the vault arches. Immediately beyond the south-east corner of the great central hall there is a spacious smoking-room, 25 ft. square. There are counters on the north and west sides of the central hall, whilst the whole of the area is fitted with tables for the visitors who may frequent the establishment. The culinary department is at the east end, and occupies a considerable portion of the basement area. It comprises a large kitchen, and other apartments connected with the cooking arrangements of the establishment. The cooking apparatus is being furnished by Mr. W. J. Smith, of Finsbury-pavement. At the north-east end, some distance beyond the central hall, a still-room, 25 ft. square, is in course of construction, where the coffee, tea, and cocoa will be prepared. There will be three entrances into the establishment, one from Threadneedle-street, on the north side, another from Cornhill, on the south side, and a third at the east end, near Lloyds'. The two entrances from Threadneedle-street and Cornhill respectively lead down into a corridor 90 ft. long and 15 ft. wide, along which the large central hall and the several rooms on either side are reached. On each side of the entrance hall and corridor there will be lavatories and hair-dressing rooms, the ladies' lavatories being on the Threadneedle-street side. Artificial light will, of course, be necessary throughout the day, and for the purposes of air and ventilation a large fan, driven by an engine, will be erected at the east end. This, as well as the cooking machinery, is in course of construction by Mr. Smith. The piers, walls, and arches of the vaults will all be decorated, and when completed this huge underground hotel will, we fancy, present an imposing appearance.

Mr. W. Brass, of Old-street, is the contractor, and Mr. Weston acts as foreman and clerk of the works.

THE ARCHITECT OF THE SCOTT MONUMENT, EDINBURGH.

We regret to hear that the widow of the architect of this well known monument, Mr. George Kemp, is in distressed circumstances. The Edinburgh Corporation have taken the matter in hand, and made a small allowance to Mrs. Kemp; but it is proposed that a public subscription be raised, and it is hoped that sufficient will be collected to give her an annuity of at least 50*l.* per annum, to be continued during their lives to her two children. There are doubtless some in London who would help; as would probably the Architects' Benevolent Society if properly applied to.

THE NEW CITY COUNCIL CHAMBER.

The Corporation have just decided upon an important purchase of property in the City for the new council-chamber. It consists of freehold property in Aldermanbury, and the sum agreed to be paid for it is 20,000*l.*, together with 500*l.* for fixtures. In consideration of agreeing to let the Corporation purchase it, the present owners are to have a lease of the adjoining premises for twenty-one years, at an annual rent of 400*l.* During a discussion which took place on the subject, it was stated that the Corporation could not carry out the design of the new council-chamber without this property. It further transpired, as to the provision of the necessary funds, that the Corporation expected 5,000*l.* or 6,000*l.* from the London and Brighton Railway Company, 2,000*l.* from the Commissioners of Sewers for property in Fore-street, 2,000*l.* from the Great Northern Railway Company, and from Zion College, if the negotiations now in progress are carried out, 31,625*l.* They were also negotiating with Government for the sale of a large property, and likewise expected a heavy amount from another quarter. It was urged by several members of the council, in support of the purchase of the Aldermanbury property, that the purchase of property around Guildhall should be encouraged.

PROGRESS OF THE WEST KENT MAIN DRAINAGE WORKS.

A large sum has already been expended on the West Kent Main Drainage Scheme, and a considerable portion of the work has been executed, but more money is required to continue the works, and, last week, Mr. J. T. Harrison, C.E., one of the inspectors of the Local Government Board, held an enquiry on the subject, the West Kent Main Sewage Board having made an application for powers to borrow 37,250*l.* for the purposes of further carrying out the sewerage of the district. It appears from what transpired at the enquiry that the Board has already completed a line of sewer, under the superintendence of Sir Joseph Bazalgette, C.E., and Mr. Williams, C.E., from Bromley to the outfall at Long Reach, Dartford, at a cost of 200,000*l.* and the additional amount required was to carry on the sewer to Beckenham, where, by a short junction, it will be able to take away to the Thames the whole of the sewage of Croydon and South Norwood, about which there have already been negotiations. The financial part of the work, including the amount of contributions of the constituent authorities, was explained by Mr. R. G. Muller, the secretary to the West Kent Board, and Mr. Alfred Williams, C.E., explained the nature of the proposed works. There was no opposition, and the inspector intimated that he should report favourably to the Local Government Board.

A COLOSSAL RAILWAY GOODS STATION.

AMONGST other new works of great magnitude on which the London and North-Western Railway Company have for some years been engaged at different points on their system is a new goods station at the extreme north end of Liverpool, which has been in course of erection for some time past, and which is now so far completed that it is intended to be opened for traffic on the first day of the new year. This station, which has been named the Atlantic Docks Station, is actually beyond the boundary of the borough of Liverpool, being within the neighbouring borough of Bootle, and in immediate proximity to the large new docks at the north end of the port, which are at present in course of construction on land reclaimed from the foreshore of the river. This land is upwards of 200 acres in extent, and was purchased by the Docks Board, at a large outlay, from the Earl of Derby as lord of the manor. After the purchase a still further large sum was expended in the construction of a river wall between one and two miles in length, and in "making" the land between the intended new docks and the wharfs and warehouses space.

It is upon a portion of this space that the spacious new goods station of the London and North-Western Company has been constructed. It covers an area of nearly twenty acres, and is one of the largest railway goods depôts in the kingdom. The greater portion of the space has been devoted to the construction of the station proper, which is entirely covered in, and contains some twenty lines of rails, several miles in length in the aggregate. In the construction of the station, many hundred tons of iron have been used in the columns and girders supporting the roof, as well as in other portions of the work. On the space in immediate contiguity with the covered station area several large warehouses are intended to be erected by the company, and will immediately be proceeded with. The station is replete with every convenience for dealing with general goods traffic, including cotton goods and other merchandise intended for immediate shipment, or for being conveyed into the interior of the country on arrival in Liverpool by ship. By means of the line of rails carried along the whole length of the docks from north to south, —now upwards of eight miles in length,—the station is placed in direct connexion with the entire dock system. The works have been carried out under the superintendence of the Company's engineer-in-chief and his assistant engineers. Access to the station is obtained for the company's trains from different parts of the country, by means of a branch line which the company some years ago constructed between Edgehill and Bootle. In addition to their goods stations in the interior of the town, the London and North-Western Company have now three stations of this character in direct connexion with the docks, namely, the new station just described at the north end; another at Waterloo; and a third at Wapping, in the vicinity of the south docks.

CONVERSION OF YORK HOUSE, REGENT-STREET.

THE JUNIOR ARMY AND NAVY STORES.

A LONGING for co-operative stores appears to be permeating almost every class of society, and amongst other establishments of this character, a well-known building in Regent-street, immediately above Waterloo-place, York House, which has for many years past been known as a club-house or chambers, chiefly as the residence of unmarried members of the aristocracy, is undergoing most extensive alterations, both externally and internally, for the purpose of being converted into what is designated the "Junior Army and Navy Stores," after having been purchased, it is stated, at an outlay of 20,000*l*. The building had originally three stories above the ground floor, extending a considerable depth, and containing, for the accommodation of the members of the club, no fewer than 130 rooms. Two additional stories have been added, and it is now one of the loftiest and most conspicuous buildings in Regent-street. But it is in the interior of the structure where the most extensive works have for some time been in progress, and are now almost completed. The interior has, in fact, been gutted and reconstructed for the purpose of adapting it to the comprehensive and varied business to which it is in future, at any rate for a time, to be devoted. When it is stated that although two additional floors have been built there are only eighty rooms instead of 130 in the original building, the transformation which the interior has undergone may be imagined. Some of the rooms are very spacious and lofty, one of them being 85 ft. in length, and 22 ft. in height, whilst the decorations and fittings throughout are elaborate. The principal entrance is from Regent-street, leading into a hall or vestibule, which has been artistically decorated, and the floor laid in mosaics and encaustic tiles, several of the floors in the other rooms being likewise laid with the last-named material. Through the hall access is gained to the staircase leading to the several floors. On the right hand of the ground floor is the grocery department, and on the left the provision department, the grocery department running the entire depth of the building, and having a ground area of 2,000 ft. Ladies' show-rooms are on the first floor, as well as several other departments; hosiery and drapery on the second; on the third floor china and glass, and refreshment and dining rooms. The fourth and fifth floors are set apart for furnishing.

Hydraulic lifts, as well as the staircase, lead to the upper floors. Iron largely prevails in the construction of the interior, in proof of which it may be stated that 105 tons of iron have been used in the construction of the floors, and other portions of the interior. The floors are constructed on Dennett's fireproof system, with rolled iron joists and concreted arches. The extreme height of the hydraulic lifts from the basement is 106 ft. The engine employed is Crossley's "Otto" gas-engine, of 6-h.p., working a pump capable of throwing twenty tons of water per hour to the upper tanks. The building throughout is supplied with over 300 ft. of 4-in. fire mains, with hydrants and hose, and over 10,000 ft., or nearly two miles, of gas-pipe have been fixed in the several rooms and departments. The wrought-iron tanks placed over the hydraulic lifts will hold 2,000 gallons of water. The superficial working area of the building is 70,000 ft.

Mr. A. Bedborough is the architect concerned, and the general contractors are Messrs. Green & King, of New Bond-street. The total cost of the building, including purchase, is estimated at upwards of 50,000*l*.

DRURY LANE *REDIVIVUS*.

RUMOUR is busy with the name of this famous as well as notorious thoroughfare. The Lane is to become a street, and Drury is to be known no more as its title.

Drury-lane has been a lane for upwards of six hundred years. The villagers whose cottages were clustered in the vicinity of the Church of St. Giles journeyed along its pathway on their road to or from the Strand, while the lowing of the cattle and the bleating of the flocks came to them from the fields on either hand. Little more than three hundred years ago there were only two houses in the Lane, the blacksmith's house and shop at the north west end adjoining the Broadway, now Broad-street, Bloomsbury, and Drury House, at the south-east end. For three centuries had the clink of the anvil sounded from the ancient forge. Doubtless the smiths did a good business in the shoeing-line, for Strype records that "High Oldburn" (the only road from the village of St. Giles to the City), "leading from the Bars towards St. Giles, was very full of pits and sloughs," and many a carrier's or packman's nag must have lost a shoe or two in struggling through the treacherous morass.

In the reigns of Elizabeth and James I. a few farmhouses sprang up in the vicinity of the smithy, and on the north-east corner of the Lane arose a hostelry, named "The White Hart," which was demolished in 1720, to be erected under the same name at the beginning of the present century. At the south of the Lane, opposite Drury House, a tavern, "The Cock and Pye," was erected. A right merry place it was in days of yore, and thither the lads and lasses used to betake themselves after a dance round the May-pole in the Strand, and refresh themselves with cakes and ale. The Church of St. Mary-le-Strand covers the ground where the May-pole stood. Among the merrymakers would probably be found that "mighty pretty creature," Nell Gwynne, the peerless beauty of the Coal-yard, one of the tributaries of the Lane. This Yard has seen better days. Only recently, the last of its stately mansions, sadly gone to decay, was pulled down, and its site and garden are covered with a school. Here also, until lately, stood a large dwelling which had in former times served the purposes of a round-house and a lock-up. South of the Coal-yard is Macklin-street, formerly Charles-street, formerly Lewknor's-lane,—for there, in the days of King James I., dwelt Sir Lewis Lewknor, in his mansion surrounded by flowers and fruit-trees. Since his days, Lewknor's-lane, though its name has charged, has been known as a haunt of immorality. Why should the name of Macklin be linked with this infamous locality? There is no record to show that in his lifetime he was in any way connected with it. But a like liberty has been taken with the name of Kemble. In the last-mentioned king's reign, Drury-lane was altered to Prince's-street, but only for a short time, when the street running from the Lane to Lincoln's-inn-fields was called Prince's-street. Here it was that Mr. Page resided, at whose house one night, after the theatre had closed, the beautiful Mrs. Bracegirdle supped; while at the "Horse-shoe Tavern," in the Lane, the profligate Captain Richard Hill plotted with six soldiers to carry off the fair actress: a sad night for Mountford the actor, who was slain by Hill. Why should this street have been new-named Kemble-street?

In the reign of Charles II., John Brownlow, gentleman, built for himself a house on the west side of the Lane, and also a street, which he named after himself. Strange to say, this street has been christened Betterton-street Short's-gardens, by its name only, still recalls the memory of the pleasant residence of Dudley Short, gent., contemporary with John Brownlow; and Parker-street, of Sir Philip Parker, who dwelt here, and was at times visited by King James.

As a continuation of Princes-street, Sardinia-street, formerly Duke-street, deserves notice. In this street "the Roman Catholics have the finest chapel for their worship in England," says "The New Guide to London," published in 1726. In this chapel was Nollekens, the sculptor, baptised, in 1737, and in 1780 it was sacked and demolished by the Gordon rioters. Opposite this chapel, Benjamin Franklin, while working as a journeyman in an office close to Lincoln's-inn-fields, lodged, at a rent of 2s. weekly.

The first theatre in Drury-lane was named the Cockpit. It was erected by Killigrew, actor and manager, in the reign of Charles II., on the ruins of a playhouse which had demoralised the town, and was burned down by "the brave London 'prentices," as they are called in a ballad of the time, on Shrove Tuesday, 1616, in virtue of their right on that night to attack and demolish houses of evil notoriety. Drury Lane Theatre was opened in 1663, burnt down in 1671, again rebuilt and taken down, rebuilt for a third time in 1794, and again burnt down in 1809. The present theatre was erected in 1812.

Many memories cling round Drury-lane. In it resided the poetical Earl of Stirling; the Marquis of Argyle, who added such a lustre to the House of Macullammohr; here the Merry Monarch strolled between the hedgerows while as yet the birds and milkmaids sang together. Hither came Dryden, Gay, Defoe, Pope, Hogarth, and Goldsmith to find matter for the pen or pencil.

Drury-lane is to be no longer a synonym for all that is vile. Already some of its loathsomeness has disappeared. Some of the courts running from the Lane to Wild-street are being razed to the ground. The Board schools are clearing the atmosphere of the Coal-yard; but few of the dilapidated hovels of Macklin-street remain; Parker-street is, in regard to its hovels, little more than a name; Short's-gardens is nearly purged of its subterranean dens; and the abominations of the southern portion of the Lane are doomed. Ere long its "paltry drabs and bloods" will vanish, and the Lane rejoice in the blessings of freer light and purer air. Its name, however, should be retained.

SURVEYORSHIP ITEMS.

Derby.—There are 118 applicants for the vacancy caused by Mr. Duncombe's resignation of the borough surveyorship. The salary is 400*l*. per annum.

Dover.—At a special meeting of the Dover Town Council on the 16th inst., Mr. Matthew Curry, jun., was elected borough surveyor, with a salary of 450*l*. per annum, house, and fuel.

ARBITRATION.

Sir,—A recent law case as to what was held to be the irregular conduct of an arbitration by one who was admitted by both sides, and by the court, to be an able and experienced man in this class of business, has recalled to my mind how very vaguely defined are the duties, powers, responsibilities, and rights of arbitrators and umpires. This is the more remarkable when it is considered how largely the practice of arbitration is resorted to in this country. Doubtless, in practice, many details of procedure which would be held in law to be improper, are quietly acquiesced in by the parties, so that a large amount of irregular proceeding continues without question; nevertheless it is most important that the attention of architects and surveyors, who so frequently act as arbitrators, should be directed to the proper and legal methods of conducting arbitrations.

Amongst the authorities I have studied are, barristers—Russell, Glen, Raymond, Jenkinson, and Redman; surveyors — Banister Fletcher and Jackson; but all of them in many places confuse their meaning by using the same general term "arbitrator," whether they are referring to one of two joint arbitrators, to a sole arbitrator, or to an umpire, and they leave us in much doubt on the following points:—

(1.) When a separate arbitrator is appointed by each party, should the arbitrators appoint an umpire before proceeding to the further consideration of the matters referred to them?

(2.) If, having appointed an umpire, should the arbitrators take evidence in his absence? as, in the event of their disagreement this course would necessitate an entire re-hearing before the umpire.

(3.) This question arises from the last. It is stated that an umpire is to be an umpire between the parties, not between the arbitrators, and that his authority commences from the disagreement of the arbitrators. Can the arbitrators be said to disagree whilst the time for making their award is still running, and before they have heard the evidence which each of the parties is willing to produce? In other words, can the joint arbitrators "agree to disagree" without full investigation, merely for the purpose of bringing in the umpire at an early stage of the proceedings?

(4.) In the event of the umpire being called in after the arbitrators have heard the evidence and disagreed, should the arbitrators sit with him to determine the matters jointly with him? This is exceptionally the case in London, although I hear it is the common practice in the North. It appears to be an unnecessarily cumbrous proceeding, as the opinion of the umpire would override the opinions of the arbitrators.

(5.) In the event of the arbitrators disagreeing after hearing the evidence, and then calling on the umpire to act, are their duties *qud* arbitrators at an end when the umpire enters upon the reference?

(6.) If not, is it right for the arbitrators to give evidence before the umpire either of matters of fact or of opinion? It is common for them to do both; and, indeed, not infrequently an arbitrator is the only person who can depose to material facts, but it may well be that in that case he should not be appointed an arbitrator.

(7.) "In the absence of any express promise by the parties to the reference an arbitrator cannot recover his charges by action" (Redman). This appears to apply only to a sole arbitrator, and to express promises by both parties. It is obviously improper for one of two joint arbitrators, or for a sole arbitrator, to take such express promise from one only of the parties; his duty in either case being to act judicially, and not as an advocate. Two joint arbitrators having disagreed, appointed an umpire; one did not give evidence, the other did; the evidence was accepted by the umpire, and was not objected to by either party. At the close of the arbitration, the arbitrators were asked by the umpire if he should include their fees in the amount to be paid to him on taking up the award. The first-mentioned arbitrator, who had not given evidence, said "No." The umpire then refused to include the fees of the other arbitrator, stating that if he did not include the fees of both, he would not include those of either. Can the arbitrators, under these circumstances, recover their fees from the respective parties?

(8.) Suppose a dispute between the arbitrators, or between arbitrators and umpire as to the amount of their respective fees, can an umpire settle them?

(9.) Can an action be maintained by an arbitrator against a co-arbitrator or an umpire for his fees received by the defendant?

(10.) "Where there have been no differences between the parties previous to their submission, and the reference is merely to fix a valuation . . . . it is not strictly a reference to arbitration, and the provisions of the 17th section of the Common Law Procedure Act, 1854 [as to making the submission to arbitration a Rule of Court] do not apply to such a case." (Redman). Is a building contract, strictly a submission to arbitration, in which the architect is appointed the sole authority to determine by his certificate the value of extra and omitted works, when to properly determine the amount due to the builder it is necessary to take into account facts outside the architect's own personal knowledge and in dispute between the parties, but to be ascertained by the deposition of witnesses on oath or otherwise, such as the measurements of work covered up and inaccessible? W.

INCONSISTENCY.

A SATIRE.

When with consistency declaring war,
All Albion's sons most truly Britons are!
No sooner do they some quaint view explain,
Than with the opposite your ears they'll strain;
They'll hold at once that both the views are right,
And first for one and then the other fight,
Then turn all smiling for the world's applause,
For they have flouted reason, facts, and laws.

With taste one-sided they'll affect Japan,
The wares of China, and the bricks of Anne;
With willow-pattern, barb'rous blue and white,
They'd set the world æsthetically right;
The more fantastic doth the work'ship show,
The more ecstatic doth the critic "blow";
In weekly journal you shall find his lore,
His puking verses and his dreamy snore;
In print he poses, and will learnèd prate
Of silly maidens, knights emasculate,
Of pictures painted by a kindred set
Who each, loud cawing, doth each other pet.

Of "Art for Art's sake" they will vaguely talk,
And dream that they with Truth and Nature walk,
Though what they really think 'tis hard to learn,
For all their talking is but dodge and turn:
"Art is not art, nor this clear thing nor that,
'Tis something, nothing,—yea, they know not what;
From sense did ne'er divine afflatus spring,
'Tis stark unreason gives poetic ring."

One moment they'll some technic craze uphold,
Then turn to seek some more congenial fold,
To show how workmen did surpassing well,
Fine things indeed the moderns can't excel,
Without three R.s, or Brompton's wondrous aid,
Without being noticed, and without being paid,
By men unwash'd, who ne'er on beef were fed,
Who lived in hovels,—died on barley bread.

Amidst æsthetic cant the workman stares,
Bewilder'd stumbles, and the wrong thing dares,
Till forced at last, the poor unhappy wight
Exclaims with Pope,—"Whatever is, is right!"

You've heard the teaching of one curst extreme,
The other kicks as oppositely the beam;
Would make new science play the larger part,
Than grand experience tells us holds in art,
For taste, as led by Wisdom's golden rule,
Was e'er the feature of the greater school
Of poets, painters, and the wiser few,
Who soar'd above the mere mechanic crew.

Teach men to think, if you would have great acts;
Don't cram them full with ill-digested facts,
Men cannot bear such burden of the soul
As they would have, who'd make them bear the whole
Great sphere of knowledge, as on Atlas' back,
All science cramm'd in one huge rounded pack.
Too much of one, they'll have the lesser part
Of something needed in consummate art;
Do not too much, let Nature walk alone,
Just lift her o'er some hard and rugged stone;
Let moderate knowledge soul-spread pinions touch,
The direst error is to teach too much.

Or this or that, please, Britons let us know;
If we're to reap we needs must wisely sow;
If your new critics modern work despise,
And instinct's best, 'tis folly to be wise.
Why haste at once and close your technic schools
And leave all art to mere untutor'd fools;
If not to these, to those more wisely sped,
Who find their school by nobler reason led.

Metis.

THE WATER IN THE SEVERN TUNNEL.

The workings at the Severn tunnel are still filled with water caused by the spring which recently flooded them and stopped operations just at the time when the headings driven from either side of the estuary were within a few yards of meeting. The Great Western Railway Company have, however, resolved to take immediate steps to repair the damage done to the works, and with this object machinery is now in course of construction. This machinery consists of the most powerful pump that can be obtained, which is at present in course of erection, and upon which a large number of working engineers are employed with the view of completing it as early as possible, so that the work of pumping out the water from the workings in the headings may be commenced. The pump, however, is of such ponderous dimensions that it is believed it cannot be completed and ready to commence pumping in less than two months. The engineers are confidently of opinion that when once it is in operation it will very quickly clear the water out of the workings, when the headings may be proceeded with and completed.

WEST OF SCOTLAND.

GOVANHILL AND CROSSHILL MUNICIPAL BUILDINGS; ROTHESAY NEW PUBLIC HALLS.

Some of the small burghs in the West of Scotland are looking up in the way of new buildings. The feature about the work, too, is that the corporations do not do it themselves, but get it done for them. Paisley, as noticed more than once in these columns, is hastening to completion a gift of a town-hall from the Clark family, whose Anchor Mills, by the way, suffered seriously from fire the other day; Rothesay has just taken possession of new public halls built for the town by Mr. Charles Duncan, a former provost of the burgh; and Govanhill and Crosshill, suburbs of Glasgow, have jointly come into the ownership of a town-hall and municipal offices by the kindness of Mr. W. S. Dixon, the well-known ironmaster in the West of Scotland. The proceedings of these two occasions were marked by considerable ceremony, especially at Crosshill, where there was a gathering of provosts and county gentlemen in the height of their glory, delivering speeches at one another. Mr. W. S. Dixon, the donor, was unable to be present on account of his health. At Rothesay, Mr. Chas. Dalrymple, M.P., and many other notables, were present.

The halls opened at Rothesay cost something like 20,000*l*. The site is in East Princes-street, in the front of the town, and overlooking the picturesque bay, which swarms in summer with yachts and small boats. It was at one time contemplated spending only from 11,000*l*. to 12,000*l*.; but when the site was purchased and the contracts closed, it was found that close on the sum expended would be required. The site was occupied by a substantial three-story building, and the front elevation raised to five stories has been utilised. It has, of course, been remodelled, and surmounted by three towers. The main entrance in the centre of the ground-floor has a porch extending across the pavement, and on either side there are handsomely fitted-up shops. A corridor, laid with encaustic tiles, and decorated with figures on pedestals, leads to the main hall, which is designed to accommodate 1,250 persons. It is 83 ft. by 48 ft., and from the dome to the floor is 46 ft. A substantial gallery wholly supported from the walls, leaving the floor free of pillars, runs round three sides of the hall, and at the further end a platform is raised. Behind the platform there is a recess for an organ, and along the top of this, in a line with the gallery, are three panels, containing thirteen life-size figures. The figures are said to represent the ancient inhabitants of the divided island of Bute, praying Neptune to withdraw the water and unite the island. The smaller hall is 42 ft. by 27 ft., and, like the larger one, is lighted from the roof. It accommodates 300 persons. Messrs. James Hamilton & Sons, of Glasgow and Rothesay, were the architects; Mr. Wm. Morrison was the mason; and Mr. Robert Easton was the joiner.

The plans for the new town-hall and chambers for Crosshill and Govanhill were prepared by and executed under the personal superintendence of Mr. Francis Stirratt, architect, of West Regent-street, Glasgow. The struc-

ture is two stories in height, the ground-floor being laid out as chambers for the two corporations. The upper floor is entirely devoted to the town-hall. The main entrance in Dixon's-avenue is in three doorways, separated by handsome columns. The vestibule is 35 ft. long and 15 ft. broad, and from either side is a staircase leading to the hall. The hall measures 100 ft. long and 45 ft. broad, and affords accommodation for between 600 and 700 persons. There is a nice suite of ante-rooms arranged in an *entresol*, and communicating with the hall, which is in all respects excellently well fitted up. The ground-floor is entered from Cathcart-road, the portion of the building to the right of the doorway being devoted to the Govanhill authorities, and that on the left to the older and more pretentious burgh of Crosshill. There are a magistrates' room, retiring-apartments, and a commodious waiting-room for the public. Externally the edifice is very well decorated. A clock-tower rises to a considerable height at the south-east corner. The corners of the tower and the main gable are finished with circular turrets, which again are surmounted by carved lions rampant holding shields bearing devices. Over the magistrates' entrance to the building is the Dixon coat of arms, flanked by carved work of good design and two medallion heads.

ASSOCIATED CARPENTERS AND JOINERS OF SCOTLAND.

THE eighteenth annual report of the Associated Carpenters and Joiners of Scotland was issued on the 19th inst. In the opening remarks the general secretary, Mr. William Paterson, Glasgow, states that he has to notice, both in connexion with the Association and the trade, various matters which were not the most encouraging. Such disputes as had existed in branches during the past year had been wholly due to interference by the employers either with the established rate of wages or with working regulations. The results of these disputes had, in the main, been unfavourable to them, and, in addition, there had been numerous reductions of wages and repudiations of their working regulations, to which no opposition was offered, owing to the fearfully depressed state of the building trade. As illustrating that depression in the West of Scotland, he had to state that on the 1st of November, 1877, 3,080 journeymen joiners were employed in Glasgow, and on the 1st of November, 1879, only 1,224 were employed. There had been no attempt worth noticing on the part of the employers in the building trade to depart from the nine-hour day. As much could not be said of the Clyde ship-builders. They could not lose the opportunity which the depression of trade afforded, and the 51 hours per week had been superseded by the 54 hours. How long the 54 hours would continue the rule on the Clyde depended very much upon the workmen in view of the improved state of the ship-building trade. The income for the year amounted to 7,362*l.* 12*s.* 5½*d.*, showing a decrease of 2,752*l.* 9*s.* 9½*d.* when compared with the previous year. There had been paid as sick aliment 3,759*l.* 17*s.* 5*d.*; as funeral allowance, 534*l.*; as superannuation allowance, 49*l.* 15*s.* 6*d.*; as tools compensation, 398*l.* 6*s.* 11½*d.*; as strike allowance, 502*l.* 5*s.* 5*d.*; as victimised allowance, 365*l.* 3*s.* 1*d.*; and 300*l.* as bonuses to six members. The gross expenditure amounted to 9,181*l.* 6*s.* 10½*d.*, which left a deficiency of 1818*l.* 14*s.* 4½*d.* upon the year's transactions. Of that sum 1,353*l.* 12*s.* 10½*d.* fell to be borne by the trade section, and 465*l.* 1*s.* 6½*d.* by the sick section. This left 3,260*l.* 8*s.* 4½*d.* belonging to the trade section, and 5,334*l.* 9*s.* 9½*d.* to the sick section. There was a decrease of 2,005 members during the year, the number being 6,105. It appears from a trade census which has been compiled that there are about 10,030 carpenters and joiners, and 3,807 apprentices in the various districts. Another table shows that their hours of labour range from 50 to 57 a week, and that their wages vary from 5½*d.* to 7½*d.* an hour.

A Brass Eagle Lectern, of good design, has been presented to Christ Church, Wanstead, Essex, in memory of the late Rev. G. S. Fitzgerald, which was made by Messrs. Jones & Willis, of London and Birmingham. The same firm have in hand a marble font for the same church.

OBITUARY.

Mr. Henry Warren, R.I.—The death of this gentleman, one of the oldest of our painters in water colours, will be heard of with regret by many. Mr. Warren died on the 18th inst., aged 85, at the house of his son, Mr. Albert H. Warren, where he had lived in retirement for the last five or six years. Mr. Warren, who has in his time produced a large number of beautiful pictures, and published some works on art, held many important positions, and was respected in all. He was acting president of the Institute of Painters in Water-Colours almost from its foundation, and when retirement became necessary, through failing health and eyesight, he was unanimously elected hon. president for life. He was knighted, as was his relative, the late John Martin, by Leopold, the late king of the Belgians, in acknowledgement of his talent. Of late he was in receipt of a pension from the Royal Academy, and was also on the Civil list for 50*l.* per annum on account of his aids to art through a long and industrious life. Mr. Warren was buried on the 23rd inst. in the Brompton Cemetery.

Mr. John Leslie.—At a meeting of the Metropolitan Board of Works on the 19th, the Chairman said it was his painful duty to lay before the Board a letter he had received from Mr. Henry Leslie, announcing the death of his father, Mr. John Leslie, the senior representative at the Board of the Vestry of St. George, Hanover-square. Mr. Leslie died on the 15th inst. Dr. Brewer proposed a resolution, expressive of the sympathy of the Board with Mr. Henry Leslie and the other members of his family, on the loss they had sustained by the death of their father, who had been for many years a member of this Board. Mr. E. Dresser-Rogers seconded the proposition, and Mr. Richardson, in supporting it, said no one could fail to recognise the energy and extraordinary activity of their deceased friend. He certainly, in his (Mr. Richardson's) opinion, thoroughly represented his Vestry, and they must give him full credit for having done what he believed to be his duty. We add to these remarks an expression of our own regret. Mr. Leslie was a man of remarkable energy and ingenuity. A few years ago he made some inventions in respect of lighting and heating, which have scarcely been utilised to the extent that might have been expected. He was one of the members at the original formation of the Board of 1855, and previously was a member of the Metropolitan Commission of Sewers and Westminster Commission of Sewers.

M. Alexandre Denuelle has (according to the *Athenæum*) died suddenly in Florence. He was largely employed in planning the interior mural decorations of public buildings in France. The ornamentation of many churches was the product of his pencil, and he either restored or completed the decorative work in the Abbeys of St. Denis, St. Paul at Nîmes, and St. Polycarp at Lyons. The internal decoration of the new part of the Louvre was intrusted to him. The only English building which he treated is the Oratory at Birmingham. Shortly before his death he executed some designs for the interior of Strasburg Cathedral. He was born in Paris in 1818, and studied under Paul Delaroche.

Mr. Dominic Colnaghi.—The death took place, on the 19th of December, at Margaret-street, Cavendish-square, of Mr. Dominic Colnaghi, of Pall-mall East, in his 91st year.

Mr. Gibbons, of Buntingford.—The death of Mr. William Gibbons, a well-known builder in Hertfordshire, on the 4th inst., will be regretted by many. Mr. Gibbons settled in Buntingford as a successor to Mr. Warren, about a quarter of a century since, and by an unswerving rectitude and business qualifications of a high order he had succeeded in establishing a business which was known far and wide, and with which the interests of a large number of *employés* in Buntingford and neighbourhood have for many years been closely identified. In the work of church restoration, not only in many parishes in this neighbourhood, but in many more distant parts of the country and also in other public works, Mr. Gibbons had been much engaged, and we can speak personally of his uprightness and ability. As a large employer of labour, a good master, and a kind friend and neighbour, he will be missed in the town. The business will be carried on by his former partner under the name of William Gibbons & Co.

MANCHESTER SCHOOL OF ART.

THE annual meeting and presentation of prizes in connexion with the Manchester School of Art took place on Friday, the 19th inst., in the Lecture Theatre of the Royal Institution. The chair was occupied by Mr. F. W. Grafton, and Sir Coutts Lindsay distributed the prizes.

The report of the committee stated that since the last annual meeting the committee had most seriously considered the question of cost in relation to the new building. According to the tenders sent in for the erection of a school according to the design illustrated by the model exhibited in the Art Treasures Exhibition, a sum of about 25,000*l.* would have been required. Having regard to the depression of trade, which rendered it most doubtful whether that sum could be raised at present, and to the urgency of making provision for the accommodation of the school, a design of a somewhat more modest character has thus been prepared and approved. The design was for a brick structure, in which material it would have cost about 19,000*l.* As, however, the treasurer, Mr. F. W. Grafton, thought it most desirable that the structure should be worthy of the city, and of its commanding position, he strongly advocated the facing of the façades with stone, and to relieve the building committee from the responsibility of obtaining the fund required to meet the extra cost, he has most generously arranged to guarantee the extra sum, upwards of 2,000*l.*, required for the purpose. The committee have already entered into a contract with Mr. Herd for the erection of the new school. Although the reduced scale and cost of the building render the responsibility less onerous, they have still to solicit the aid of the people of Manchester to the amount of about 5,500*l.*

The Chairman, in opening the proceedings, said he was told that Mr. Rickards had consented to place his collection of Watts's paintings at the disposal of the Royal Institution for exhibition, the profits to be divided between the Children's Hospital and the new building of the School of Art.

The report and balance-sheet were adopted.

On the motion of Mr. J. Murgatroyd, seconded by Mr. Edward Salomons, a vote of thanks was accorded to Mr. Muckley, the head-master, and the teachers, for their untiring energy in the faithful discharge of their duties.

Sir Coutts Lindsay then distributed the prizes, and afterwards delivered an address, in which he made some encouraging criticisms upon the work of the students of the School of Art, which he had personally inspected. He pointed out the advantages that accrued from life-studies and the study of the antique. He knew a great many pupils objected to the antique, finding it too dry and uninteresting; they were anxious to hurry on to the study from the life. In that matter they made a mistake; in fact, unless an artist had a good idea of the antique, he (Sir Coutts) doubted whether he would ever attain a high position in art; at least, he would not attain a fine knowledge of art. The use of the model was to enable the painter to represent what he wanted on his canvas, and to give vitality and life to his idea. Unfortunately, it was impossible to get a model of a type so fine as to enable the artist to make use of it without any change or alteration in any work of imagination, and if the artist had not learned the human form in its best proportions and finest qualities from the antique, he would always find himself unable to express nature in its most beautiful form, and he would find that his drawing from nature instead of helping him would puzzle him in his work. If a man had a proper knowledge of the antique he could correct nature by that knowledge; if not, he must keep to what he saw, and he would never produce very fine work. The first object of an artist was to be able to imitate what he saw; and, secondly, he must have the power to direct the hand in harmony with the eye. The education of the mind ought to accompany the education of the hand, and those drawings which educated the mind were the most important; therefore he insisted, and every master should insist, upon the proper use of the model. The three necessities for artists were power of imagination, common sense, and energy of purpose; and the possession of all three combined would make what was one of the rarest things among men,—a great artist.

Warwick.—A stained-glass window has just been placed in the east end of St. Mary's Church, Warwick. The subjects illustrated are, in the centre lights, the Supper at Emmaus, and the Sermon on the Mount, and, in the side-lights, events from the life of Christ. In the tracery-pieces are figures of Apostles and Prophets. The glass is executed in the fifteenth-century style of work, in keeping with the architecture of the chancel. The window was designed and executed by Messrs. Heaton, Butler, & Bayne.

THE APPROPRIATE TREATMENT OF GRANITE IN CITY ARCHITECTURE.

As the use of polished granite for building in London is increasing, it is worth while to consider whether it is being applied in a manner best calculated to display the inherent beauty of the material with a sufficient regard to its natural characteristics.

Assuming, for the sake of discussion, a negative reply, the question seems to resolve itself into one of style. Hitherto, in London, granite has been associated exclusively with Classical architecture, but with this striking defect, that the most important details are not executed in it, probably on account of mechanical difficulties, or of doubt as to their good effect or of expense. Dados, columns, architraves, pilasters, friezes,—all plain surfaces,—have been accomplished easily enough, but those crowning and essential features, the capital and cornice, have been abandoned to Bath or Portland stone,—an inferior material where only the very choicest should be found. The result is a serious want of harmony, which daily becomes more noticeable, for while the freestone is discoloured and eventually blackened by the absorption of the soot of the London atmosphere, the granite remains unchanged; and it at once becomes evident that if the whole of the order cannot be carried out in one material,—or in two equally good materials,—it should be abandoned for the purpose under consideration.

Even if an architect, on some important occasion, felt himself at liberty to disregard the great cost of the manual labour in executing capitals and cornices in polished granite, the effect would certainly be disappointing, inasmuch as confused glitter would result from the combination of positive and numerous reflected lights on so many surfaces at different angles.

Without reflecting in the least upon its design, there is a granite building opposite Cannon-street Station which illustrates very forcibly the unsuitability of this material in Classical architecture, even when,—as in this example,—no freestone is used.

Under these circumstances, it does not require very much reflection to come to the conclusion that the selection or adaptation of a later style,—Byzantine, Romanesque, or Saracenic,—is necessary. In these buildings there is a principle of construction well suited to the hard and intractable nature of granite, and to the display of its many beautiful colours, its gem-like translucency, and its rich depth of tone, in the most satisfactory manner. Architectural effect of a very striking character is obtained by ornamental construction, with two or more coloured materials,—marble, porphyry, serpentine, and others,—and there is often a minimum of moulding and carving which are the great difficulties in granite building. It may be said that the greatest effect is obtained with the least expenditure of labour.

In Florence, Palermo, Messina, but more particularly in Cairo, this ornamental construction has been most completely carried out, and in adopting it, it would only require the refinement and cultivated taste of the modern architect to render it perfectly suitable for English buildings. Arches of all forms and compound lintels have the voussoirs in two colours, and with ornamental edges, the letter ≷ forming a chevron being a favourite form. Panels, strings, and jambs of ingenious geometric tracery are constructed with coloured materials. All these have flat surfaces, so as to exhibit the beauty of the materials to the greatest advantage. Even the carving and moulding is of flat superficial character, but most elegant and refined, and would be well suited for granite work. The labour of executing it would be comparatively slight,—indeed, at the present time much of this kind of work is done in Aberdeen.

The chief characteristic of this ornamental work which renders it suitable for granite is, that all the separate pieces are straight-sided, though, of course, at many different angles. All the pieces could therefore be prepared with the greatest economy by the powerful machines recently invented in this country, which reduce the rough surface of a block of granite, 14 by 8, in one minute, while the workman simply looks on. The polishing of the surfaces of granite is also now done by machinery, with the same comparative rapidity and almost entire freedom from manual labour, which can be more intelligently employed.

This brings me to the economical part of this question. There can be no doubt that the price at present charged for polished granite is unreasonably high. This is in consequence of its being supplied by men whose business is rather in heavy monumental work than in the lighter kind of work that would be required by builders carrying out the above style. A test-estimate by a well-known surveyor, based upon *bond fide* prices of labour and material from first-class men and upon detail-drawings, shows that a polished granite façade in this style would cost seven per cent. less than one in carved and moulded Portland stone. This fact, therefore, shows that if this style were adopted,—for style and economy are intimately connected,—there would be an opening for the supply of this material to builders at reasonable profit,—a more appropriate method of using granite would be established, and we should soon see façades complete from base to summit in this noble material.

HENRY TRAVIS.

THE TRANSMUTATION OF FORCE.

SIR,—The perception of the correlation of the physical forces ultimately led scientific men to regard them as so many different modes of motion or transmutations of a primary force. This knowledge will in a few years lead to wonderful results. The conversion of water and wind power to mechanical uses is destined to receive enormous development, on account of the now recognised possibility of converting these forces into electricity. This possibility was demonstrated at the late meeting of the British Association at Sheffield. We can scarcely venture to predict to what uses the transmuted power of the waves, tides, and great waterfalls may be directed. Mr. Lascelles, in his letter of last week, has suggested one. He touches upon a subject, however, in which, in my youth, I was extremely interested,—the pneumatic railway, of which, I believe, there is a model of mine in the Museum of Inventions. I also made drawings for the specification of the patent, being at that time intended for an engineer. This railway was invented by Mr. Henry Pinkus, an American, and a large working model of it was exhibited in London. The top valve in his invention was closed by a cord. Mr. Samuda substituted a hinge-valve, which was ploughed up by a contrivance attached to the frame-work of the travelling piston. Both forms worked by exhausting air from the tube. Both kinds of valve would have been blown open by compressed air. Mr. Samuda's was the form used at Exeter and Croydon.

The utilisation of tidal force and water-pressure is, of course, no novelty. The waterworks of Old London Bridge were worked by tidal action. It is on the conversion of the gigantic wind and water power at our command into electricity that the great revolution in the economical application of power to transport and to manufactures is to be anticipated. A commission of engineers could presently solve the problem.

W. CAVE THOMAS.

AN ORNAMENTAL MATERIAL.

IN the course of my ramblings lately my attention was called to a very large deposit of pure white spar quartz, and it occurred to me that it might be employed as a sort of veneering to the walls of gentlemen's residences, put on in blocks, larger or smaller, or in any form to suit the fancy of the builder, and fixed with some sort of cement to the wall. The blocks would be best fixed to each other, perhaps, by pure white sulphate of lime, prepared as gypsum; or might not the quartz be wrought into the front of the wall, in uniform or irregular blocks, fashioned in the manner, or in some similar way, to the granite now much used in the construction of many railway stations in Cumberland, where, however, the latter stone abounds?

I am not aware that the quartz has been anywhere used for the purpose suggested, but it may have been so used, and my suggestion involves nothing novel. The spar, however, would have a very beautiful effect.

THOMAS BARNES.

Wages in Warrington.—At a meeting of the building trade operatives in Warrington on the 19th inst., it was decided to resist the reduction of 1d. per hour and the increase of one hour per week, as a reduction took place only last May.

THE MISLAID TENDER.

SIR,—In calling attention to our offer of "Twenty Guineas reward for such information as will enable us to trace the mis-carriage of our Tender for Upholstery work at the Mansion House, which, though delivered at the appointed place and time, mysteriously failed to reach the Chairman of Committee then sitting to receive Tenders," you pertinently inquire, "Did any servant of the Corporation receive it?"

We are glad to be able to inform you that after considerable discussion in the Court of Common Council, the following motion was proposed by Mr. Johnson, seconded by Mr. Judd, and carried,—

"That it be referred to the General Purposes Committee to examine into the circumstances connected with Messrs. Hindley's tender; and also as to the general mode of receiving tenders by the Corporation, reporting thereon to this Court, with such suggestions as the Committee may deem fit."

We have had the opportunity of giving our evidence before this Committee, proving, not merely the due delivery of the Tender, but actually identifying the clerk to whom it was delivered.

We understand that it will be several weeks before the report of this Committee can be presented to the Court of Common Council, and we shall look forward to the result of their investigation and deliberations with very considerable interest; for when it is possible for a tender (as in this case), the lowest by some 135*l.*, to be completely lost in its transit from the Architect's office (where it was delivered) to the committee-room, it is high time to amend the mode of receiving such tenders.

C. HINDLEY & SONS.

ARCHITECTS AND LAND AGENTS.

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The action was tried before a jury at the November court, who (as reported in the *Builder* of the 22nd ult., p. 1301) found for Mr. Trevail to the extent of 31*l.* 10*s.* 4*d.* The judge, however, reserved his judgment on certain legal points. He now gave judgment for the defendant, on the ground that the school board was a corporate body with a seal, but they did not use it upon the appointment of the defendant as architect. The appointment required the seal to be affixed.

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BLASTING FOR FOUNDATIONS.

DOBSON *v.* SAUL.

THIS was an application (in the Chancery Division) to restrain the defendant from excavating, by blasting, the foundations of a house about to be built by him in close proximity to a house lately erected by the plaintiff. The *locus in quo* is part of an estate called Windermere Park estate, near Lake Windermere, which had been laid out for building, and the ground of which is of a rocky nature.

The defendant alleged that it was customary in that neighbourhood to use blasting as a means of excavation, and without it a great part of the estate could not be built on. The foundations of the plaintiff's house had been excavated by this means; but when the defendant had fixed two or three blasts for the purpose he received a notice from the plaintiff to desist, and in consequence of his not doing so the present application was made. There was a space of 24 ft. between the houses. The plaintiff alleged that he was prevented from taking possession of his house in consequence of the defendant's operations.

Mr. Glasse, Q.C., and Mr. E. Cutler were for the plaintiff; Mr. Higgins, Q.C., and Mr. Bramwell Davis for the defendant.

The Vice-Chancellor suggested that as the plaintiff had not taken possession of his house, he had better allow the defendant to finish his foundations, the latter undertaking to pay such damage as might accrue to the plaintiff in consequence of his blasting operations. It was ultimately arranged that the motion should stand over to the hearing, and that the defendant should be at liberty to continue his operations upon his undertaking to be answerable for any damage which might be done to the plaintiff's house.

The Metropolitan Board's Budget.—At the last meeting of the Metropolitan Board of Works, Mr. Munro (chairman of the Finance Committee) presented the estimates of the Board for the year 1880. He regretted that he had to ask for an increased call. Last year he had to ask for an increase of 1*d.*, and this year he required an additional ½*d.* The Board would not be surprised at this when it took into consideration the extraordinary expenses incurred by the freeing of the metropolitan bridges, and under the Artisans' Dwellings Act, which schemes alone had cost ½*d.* in the pound. After entering into details, Mr. Munro said that the total requirements for the year were 653,260*l.*, which, being reduced by the sum of 7,760*l.* derivable from fees, licences, &c., brought the total net charge to 645,500*l.* To produce this sum, a rate on the present rental of 24,501,410*l.*, equal to 6·32*d.* in the pound, would be required, against 5·82*d.* in 1879. Since the establishment of the Board, the total amount levied had been 9*s.* 10*d.* in the pound, and when the vast improvements which had been effected under its supervision were taken into account, he did not think that amount could be deemed excessive. The estimates were adopted.

PROVINCIAL NEWS.

Sheffield.—The Wolstenholm Memorial Hall, which has been erected in Queen-street by Mrs. E. M. Wolstenholm, of Kenwood Park, in memory of her husband, was opened on the 11th inst. by the Archbishop of York, and formally presented to the inhabitants. The building is in the Italian style, and has cost, with the site, about 11,000*l.* Portions of the building will be devoted to purposes of refreshment and recreation. The large lecture-hall will accommodate about 1,000 persons, and will be used for services, lectures, and entertainments. It is 72 ft. long, 40 ft. wide, and 25 ft. high. The seats are Redmayne's pitch-pine, convertible; and the gas-pendants, ten in number, have been designed by the architect. Mr. H. D. Lomas is the architect, and Mr. J. Fidler, of Eckington, is the contractor; Mr. T. Taylor, of Reed-street, has done the joiner's work; and the furniture, linoleum, and similar requisites, have been supplied by Mr. Roberts, of Sheffield Moor.

Clumber House, Notts.—The rebuilding of Clumber House, the seat of the Duke of Newcastle, which was partially destroyed by fire last winter, has been commenced, from plans prepared by Mr. Barry. The estimated cost is 60,000*l.*

Withington.—At a meeting of the Withington Local Board on the 11th inst., Mr. L. Booth, of Manchester, was appointed architect of the new offices for the Board.——The memorial stone of new workhouse schools and homes, situate in Nell-lane, opposite the workhouse, has been laid. The buildings are being erected for the Guardians of the Chorlton Union, the architects being Messrs. Mangnall & Littlewoods, whose designs were selected in limited competition. The buildings consist of six homes, three of which are situated to the right and three to the left of the administrative block. The schools are placed to the front, facing Nell-lane, with dwellings for schoolmaster and schoolmistress in the centre. Each of the six homes will provide fifty children with living and sleeping accommodation. On the ground-floor is provided a day-room, 33 ft. 6 in. by 17 ft.; sitting-room for the official in charge, lavatory containing ten wash-bowls and two baths, storeroom, and water and slop closets. The first pair floor contains two dormitories, 33 ft. 6 in. by 17 ft. and 17 ft. by 17 ft., holding twenty-four beds, bedroom for official, water and slop closets, and storeroom. The second-pair floor contains two dormitories, the same size as on first-pair floor, and holding twenty-four beds, and a bedroom to hold two beds in case of slight sickness, or separating weakly children from the rest; water and slop closets, and storerooms. The administrative block contains three workrooms, dining-hall, 70 ft. by 38 ft.; cooking kitchen, officials' sitting-room, bread-store, larder, washhouse, laundry and drying-closet, linen-room, boiler-house, and boys' plunge-bath. The whole of this block is one story high. The boys' school is situated to the right of the front block, and the girls' school to the left. Each school is provided with a room 95 ft. by 22 ft., two class-rooms each 18 ft. by 14 ft., and two book-closets. Provision is made in the centre portion of this block for the schoolmaster's and schoolmistress's dwellings, separated by a central archway forming the principal approach to the several buildings. The elevation to the front block of buildings is faced with stock bricks, the moulded work being in red terra-cotta. The window-sills, copings, &c., are of stone. The buildings are expected to be completed about the end of March next, and the estimate, exclusive of fittings, amounts to 16,924*l.* Mr. James Herd is the general contractor for the several works, and the following sub-contractors are engaged under him:—Mr. Charles Normanton for the brick-work; Messrs. Stephenson & Corcoran, the masonry; Mr. James Barrow, the slating; Mr. Henry Lightfoot, the plumbing; and Mr. Richard Higson, the plastering and painting.

Hull.—An extensive pile of buildings in Silver-street has lately been erected for Messrs. Goddard & Son, wholesale and manufacturing stationers. The style is described as Classical of the Doric order, freely treated. The lower portion of the front is of stone, and is divided into five bays, with red granite pilasters. The granite pilasters are surmounted by a cornice, and carved friese and cantilevers, finished with a stone balustrade. The upper stories are built with Scarborough yellow stock bricks, the pilasters being carried up to the height of the second story, and the various carved bands, strings, and dressings of stone are from the Whitby quarries at Cragmoor. The works have been designed by Messrs. Smith & Brodrick, architects, and carried out by Mr. George Higham, of Hull, the general contractor, the sub-contractors being Mr. George Taylor, mason, and Messrs. J. & T. Hall, joiners. It is believed that the building occupies part of the site of the grounds of the old Suffolk Palace, the erection of which, according to Sheahan and other local historians, was commenced by Sir Michael de la Pole, afterwards Earl of Suffolk. In the excavation for Messrs. Goddard's new premises, large pieces of hewn stone were dug up, one piece deserving special notice, as it was beautifully carved, and has been preserved as a memento by Messrs. Goddard & Son by being built into the side of the building under the archway. The architects express their opinion that it is a portion of the old palace, probably part of a carved stone roof.——On the west side of Savile-street are the premises of Messrs. A. Brown & Son, booksellers and stationers, which have been erected from designs by Messrs. W. Botterill & Son. The shop-front is of Ancaster stone, with recessed windows, the upper part being of red brick. The contractors for the building were Messrs. Musgrave & Son, and the furnishings were by Messrs. Curtis & Son, Leeds. The heating apparatus was supplied by Messrs. Perkins, London; and a hoist and the revolving shutters by Messrs. Bennett & Co., of Westminster.——The new premises of Mr. Henry Wilson, wine-merchant, form a conspicuous feature of Savile-street. They consist of a warehouse of four floors, the front part of the premises being devoted to offices and general business purposes. The cellars are all floored with the patent concrete flooring of Mr. Wilkinson, of Newcastle. The usual lavatory arrangements are of the best description, and were furnished by Messrs. Jennings & Co. The exterior is built of red stock brick, with dressings of Whitby stone. The architects were Messrs. Smith & Brodrick, and the builders Messrs. Geo. Jackson & Son, Witham, the carving being by Mr. Frith.

Salisbury.—The new Salisbury Middle Class School, erected for the Rev. W. Baker, has been completed. The school, which is only the first instalment of what will ultimately be a larger building, is built entirely of red brick, in the Queen Anne style, relieved by projecting chimneys, porch, and heavy mullioned windows, with small squares of glass, which are in many cases filled with ornamental lead glazing. Carved brick panels are inserted in the chimneys; they were executed by Mr. Harry Hems, of Exeter. The chimney-shafts rise from a dark tiled roof with red ornamental ridging. All the offices, kitchens, and stores, are in the basement. The dining-hall, class and master's rooms are on the ground floor, the two upper stories being devoted to the master's bedrooms, dormitories, and bath-rooms. The dormitories and dining-hall are large, lofty rooms. The schoolroom, which is of iron, is merely used temporarily until the other portion of the buildings is completed. The laundry is detached from the house. The architect is Mr. R. J. Withers, and the works have been carried out by Mrs. Hale & Sons, builders, of Salisbury, at a cost of about 6,000*l.*

Mr. Edison and the Electric Light.—A *Times* telegram, dated Philadelphia, Dec. 22, states that Mr. Edison claims to have discovered an effective, cheap electric light, which is a complete substitute for gas for household use. After fifteen months' experimenting, he accidentally discovered that burnt paper is the best substance to use, and he therefore abandoned platinum, devoting himself to perfecting this lamp. He cuts from cardboard a narrow strip, shaped like an elongated miniature horse-shoe, the strip being 2 in. long and ½ in. wide. This is placed in a wrought-iron mould, which is heated slowly to a white heat, driving off all volatile portions of the paper, which is then gradually cooled. The charred remains of the horse-shoe are taken carefully out, and are placed upright in a little glass globe, the wires of the generating machine being attached at the ends of the horse-shoe. The air being exhausted from the globe, it is sealed, completing a lamp costing about one shilling. This, Mr. Edison claims, will produce a bright mellow light, without flickering or pulsations. He has also invented a generator and regulator, his claim being that he has entirely solved the problem.

THE APPROPRIATE TREATMENT OF GRANITE IN CITY ARCHITECTURE.

As the use of polished granite for building in London is increasing, it is worth while to consider whether it is being applied in a manner best calculated to display the inherent beauty of the material with a sufficient regard to its natural characteristics.

Assuming, for the sake of discussion, a negative reply, the question seems to resolve itself into one of style. Hitherto, in London, granite has been associated exclusively with Classical architecture, but with this striking defect, that the most important details are not executed in it, probably on account of mechanical difficulties, or of doubt as to their good effect or of expense. Dados, columns, architraves, pilasters, friezes,—all plain surfaces,—have been accomplished easily enough, but those crowning and essential features, the capital and cornice, have been abandoned to Bath or Portland stone,—an inferior material where only the very choicest should be found. The result is a serious want of harmony, which daily becomes more noticeable, for while the freestone is discoloured and eventually blackened by the absorption of the soot of the London atmosphere, the granite remains unchanged; and it at once becomes evident that if the whole of the order cannot be carried out in one material,—or in two equally good materials,—it should be abandoned for the purpose under consideration.

Even if an architect, on some important occasion, felt himself at liberty to disregard the great cost of the manual labour in executing capitals and cornices in polished granite, the effect would certainly be disappointing, inasmuch as confused glitter would result from the combination of positive and numerous reflected lights on so many surfaces at different angles.

Without reflecting in the least upon its design, there is a granite building opposite Cannon-street Station which illustrates very forcibly the unsuitability of this material in Classical architecture, even when,—as in this example,—no freestone is used.

Under these circumstances, it does not require very much reflection to come to the conclusion that the selection or adaptation of a later style,—Byzantine, Romanesque, or Saracenic,—is necessary. In these buildings there is a principle of construction well suited to the hard and intractable nature of granite, and to the display of its many beautiful colours, its gem-like translucency, and its rich depth of tone, in the most satisfactory manner. Architectural effect of a very striking character is obtained by ornamental construction, with two or more coloured materials,—marble, porphyry, serpentine, and others,—and there is often a minimum of moulding and carving which are the great difficulties in granite building. It may be said that the greatest effect is obtained with the least expenditure of labour.

In Florence, Palermo, Messina, but more particularly in Cairo, this ornamental construction has been most completely carried out, and in adopting it, it would only require the refinement and cultivated taste of the modern architect to render it perfectly suitable for English buildings. Arches of all forms and compound lintels have the voussoirs in two colours, and with ornamental edges, the letter ≷ forming a chevron being a favourite form. Panels, strings, and jambs of ingenious geometric tracery are constructed with coloured materials. All these have flat surfaces, so as to exhibit the beauty of the materials to the greatest advantage. Even the carving and moulding is of flat superficial character, but most elegant and refined, and would be well suited for granite work. The labour of executing it would be comparatively slight,—indeed, at the present time much of this kind of work is done in Aberdeen.

The chief characteristic of this ornamental work which renders it suitable for granite is, that all the separate pieces are straight-sided, though, of course, at many different angles. All the pieces could therefore be prepared with the greatest economy by the powerful machines recently invented in this country, which reduce the rough surface of a block of granite, 14 by 8, in one minute, while the workman simply looks on. The polishing of the surfaces of granite is also now done by machinery, with the same comparative rapidity and almost entire freedom from manual labour, which can be more intelligently employed.

This brings me to the economical part of this question. There can be no doubt that the price at present charged for polished granite is unreasonably high. This is in consequence of its being supplied by men whose business is rather in heavy monumental work than in the lighter kind of work that would be required by builders carrying out the above style. A test-estimate by a well-known surveyor, based upon *bonâ fide* prices of labour and material from first-class men and upon detail-drawings, shows that a polished granite façade in this style would cost seven per cent. less than one in carved and moulded Portland stone. This fact, therefore, shows that if this style were adopted,—for style and economy are intimately connected,—there would be an opening for the supply of this material to builders at reasonable profit,—a more appropriate method of using granite would be established, and we should soon see façades complete from base to summit in this noble material.

HENRY TRAVIS.

THE TRANSMUTATION OF FORCE.

SIR,—The perception of the correlation of the physical forces ultimately led scientific men to regard them as so many different modes of motion or transmutations of a primary force. This knowledge will in a few years lead to wonderful results. The conversion of water and wind power to mechanical uses is destined to receive enormous development, on account of the now recognised possibility of converting these forces into electricity. This possibility was demonstrated at the late meeting of the British Association at Sheffield. We can scarcely venture to predict to what uses the transmuted power of the waves, tides, and great waterfalls may be directed. Mr. Lascelles, in his letter of last week, has suggested one. He touches upon a subject, however, in which, in my youth, I was extremely interested,—the pneumatic railway, of which, I believe, there is a model of mine in the Museum of Inventions. I also made drawings for the specification of the patent, being at that time intended for an engineer. This railway was invented by Mr. Henry Pinkus, an American, and a large working model of it was exhibited in London. The top valve in his invention was closed by a cord. Mr. Samuda substituted a hinge-valve, which was ploughed up by a contrivance attached to the frame-work of the travelling piston. Both forms worked by exhausting air from the tube. Both kinds of valve would have been blown open by compressed air. Mr. Samuda's was the form used at Exeter and Croydon.

The utilisation of tidal force and water-pressure is, of course, no novelty. The waterworks of Old London Bridge were worked by tidal action. It is on the conversion of the gigantic wind and water power at our command into electricity that the great revolution in the economical application of power to transport and to manufactures is to be anticipated. A commission of engineers could presently solve the problem.

W. CAVE THOMAS.

AN ORNAMENTAL MATERIAL.

IN the course of my ramblings lately my attention was called to a very large deposit of pure white spar quartz, and it occurred to me that it might be employed as a sort of veneering to the walls of gentlemen's residences, put on in blocks, larger or smaller, or in any form to suit the fancy of the builder, and fixed with some sort of cement to the wall. The blocks would be best fixed to each other, perhaps, by pure white sulphate of lime, prepared as gypsum; or might not the quartz be wrought into the front of the wall, in uniform or irregular blocks, fashioned in the manner, or in some similar way, to the granite now much used in the construction of many railway stations in Cumberland, where, however, the latter stone abounds?

I am not aware that the quartz has been anywhere used for the purpose suggested, but it may have been so used, and my suggestion involves nothing novel. The spar, however, would have a very beautiful effect.

THOMAS BARNES.

Wages in Warrington.—At a meeting of the building trade operatives in Warrington on the 19th inst., it was decided to resist the reduction of 1d. per hour and the increase of one hour per week, as a reduction took place only last May.

THE MISLAID TENDER.

SIR,—In calling attention to our offer of "Twenty Guineas reward for such information as will enable us to trace the mis-carriage of our Tender for Upholstery work at the Mansion House, which, though delivered at the appointed place and time, mysteriously failed to reach the Chairman of Committee then sitting to receive Tenders," you pertinently inquire, "Did any servant of the Corporation receive it?"

We are glad to be able to inform you that after considerable discussion in the Court of Common Council, the following motion was proposed by Mr. Johnson, seconded by Mr. Judd, and carried,—

"That it be referred to the General Purposes Committee to examine into the circumstances connected with Messrs. Hindley's tender; and also as to the general mode of receiving tenders by the Corporation, reporting thereon to this Court, with such suggestions as the Committee may deem fit."

We have had the opportunity of giving our evidence before this Committee, proving, not merely the due delivery of the Tender, but actually identifying the clerk to whom it was delivered.

We understand that it will be several weeks before the report of this Committee can be presented to the Court of Common Council, and we shall look forward to the result of their investigation and deliberations with very considerable interest; for when it is possible for a tender (as in this case), the lowest by some 135*l.*, to be completely lost in its transit from the Architect's office (where it was delivered) to the committee-room, it is high time to amend the mode of receiving such tenders.

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IN these days, when all questions relative to the architectural profession, and other businesses connected therewith are being mooted before the Institute and other public bodies, I think I shall not be out of place in calling the attention of the more influential members of the profession to the inroads that the persons called "land and estate agents" make upon the scope that some unlucky provincial brother professional has chosen as his field of action. Do not for a moment suppose I allude to those ornaments to their calling that are to be found all the way down Parliament-street, and without whom England would be unable to get on, but to such as in the country are always striving to take their living from out of the mouths of cultured men, who, having paid for their education, as their capital by which to obtain their existence, are obliged to look on with their hands in their pockets, because they are too proud to accelerate the downward progress of their profession by attempting to rival those who "tout for work."

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DOBSON *v.* SAUL.

THIS was an application (in the Chancery Division) to restrain the defendant from excavating, by blasting, the foundations of a house about to be built by him in close proximity to a house lately erected by the plaintiff. The *locus in quo* is part of an estate called Windermere Park estate, near Lake Windermere, which had been laid out for building, and the ground of which is of a rocky nature.

The defendant alleged that it was customary in that neighbourhood to use blasting as a means of excavation, and without it a great part of the estate could not be built on. The foundations of the plaintiff's house had been excavated by this means; but when the defendant had fixed two or three blasts for the purpose he received a notice from the plaintiff to desist, and in consequence of his not doing so the present application was made. There was a space of 24 ft. between the houses. The plaintiff alleged that he was prevented from taking possession of his house in consequence of the defendant's operations.

Mr. Glasse, Q.C., and Mr. E. Cutler were for the plaintiff; Mr. Higgins, Q.C., and Mr. Bramwell Davis for the defendant.

The Vice-Chancellor suggested that as the plaintiff had not taken possession of his house, he had better allow the defendant to finish his foundations, the latter undertaking to pay such damage as might accrue to the plaintiff in consequence of his blasting operations. It was ultimately arranged that the motion should stand over to the hearing, and that the defendant should be at liberty to continue his operations upon his undertaking to be answerable for any damage which might be done to the plaintiff's house.

The Metropolitan Board's Budget.—At the last meeting of the Metropolitan Board of Works, Mr. Munro (chairman of the Finance Committee) presented the estimates of the Board for the year 1880. He regretted that he had to ask for an increased call. Last year he had to ask for an increase of 1*d.*, and this year he required an additional ½*d.* The Board would not be surprised at this when it took into consideration the extraordinary expenses incurred by the freeing of the metropolitan bridges, and under the Artisans' Dwellings Act, which schemes alone had cost ½*d.* in the pound. After entering into details, Mr. Munro said that the total requirements for the year were 653,260*l.*, which, being reduced by the sum of 7,760*l.* derivable from fees, licences, &c., brought the total net charge to 645,500*l.* To produce this sum, a rate on the present rental of 24,501,410*l.*, equal to 6·32*d.* in the pound, would be required, against 5·32*d.* in 1879. Since the establishment of the Board, the total amount levied had been 9*s.* 10*d.* in the pound, and when the vast improvements which had been effected under its supervision were taken into account, he did not think that amount could be deemed excessive. The estimates were adopted.

PROVINCIAL NEWS.

Sheffield.—The Wolstenholm Memorial Hall, which has been erected in Queen-street by Mrs. E. M. Wolstenholm, of Kenwood Park, in memory of her husband, was opened on the 11th inst. by the Archbishop of York, and formally presented to the inhabitants. The building is in the Italian style, and has cost, with the site, about 11,000*l.* Portions of the building will be devoted to purposes of refreshment and recreation. The large lecture-hall will accommodate about 1,000 persons, and will be used for services, lectures, and entertainments. It is 72 ft. long, 40 ft. wide, and 25 ft. high. The seats are Redmayne's pitch-pine, convertible; and the gas-pendants, ten in number, have been designed by the architect. Mr. H. D. Lomas is the architect, and Mr. J. Fidler, of Eckington, is the contractor; Mr. T. Taylor, of Reed-street, has done the joiner's work; and the furniture, linoleum, and similar requisites, have been supplied by Mr. Roberts, of Sheffield Moor.

Clumber House, Notts.—The rebuilding of Clumber House, the seat of the Duke of Newcastle, which was partially destroyed by fire last winter, has been commenced, from plans prepared by Mr. Barry. The estimated cost is 60,000*l.*

Withington.—At a meeting of the Withington Local Board on the 11th inst., Mr. L. Booth, of Manchester, was appointed architect of the new offices for the Board.——The memorial stone of new workhouse schools and homes, situate in Nell-lane, opposite the workhouse, has been laid. The buildings are being erected for the Guardians of the Chorlton Union, the architects being Messrs. Mangnall & Littlewoods, whose designs were selected in limited competition. The buildings consist of six homes, three of which are situated to the right and three to the left of the administrative block. The schools are placed to the front, facing Nell-lane, with dwellings for schoolmaster and schoolmistress in the centre. Each of the six homes will provide fifty children with living and sleeping accommodation. On the ground-floor is provided a day-room, 33 ft. 6 in. by 17 ft.; sitting-room for the official in charge, lavatory containing ten wash-bowls and two baths, storeroom, and water and slop closets. The first pair floor contains two dormitories, 33 ft. 6 in. by 17 ft. and 17 ft. by 17 ft., holding twenty-four beds, bedroom for official, water and slop closets, and storeroom. The second-pair floor contains two dormitories, the same size as on first-pair floor, and holding twenty-four beds, and a bedroom to hold two beds in case of slight sickness, or separating weakly children from the rest; water and slop closets, and storerooms. The administrative block contains three workrooms, dining-hall, 70 ft. by 38 ft.; cooking kitchen, officials' sitting-room, bread-store, larder, washhouse, laundry and drying-closet, linen-room, boiler-house, and boys' plunge-bath. The whole of this block is one story high. The boys' school is situated to the right of the front block, and the girls' school to the left. Each school is provided with a room 95 ft. by 22 ft., two class-rooms each 18 ft. by 14 ft., and two book-closets. Provision is made in the centre portion of this block for the schoolmaster's and schoolmistress's dwellings, separated by a central archway forming the principal approach to the several buildings. The elevation to the front block of buildings is faced with stock bricks, the moulded work being in red terra-cotta. The window-sills, copings, &c., are of stone. The buildings are expected to be completed about the end of March next, and the estimate, exclusive of fittings, amounts to 16,924*l.* Mr. James Herd is the general contractor for the several works, and the following sub-contractors are engaged under him:—Mr. Charles Normanton for the brick-work; Messrs. Stephenson & Corcoran, the masonry; Mr. James Barrow, the slating; Mr. Henry Lightfoot, the plumbing; and Mr. Richard Higson, the plastering and painting.

Hull.—An extensive pile of buildings in Silver-street has lately been erected for Messrs. Goddard & Son, wholesale and manufacturing stationers. The style is described as Classical of the Doric order, freely treated. The lower portion of the front is of stone, and is divided into five bays, with red granite pilasters. The granite pilasters are surmounted by a cornice, and carved frieze and cantilevers, finished with a stone balustrade. The upper stories are built with Scarborough yellow stock bricks, the pilasters being carried up to the height of the second story, and the various carved bands, strings, and dressings of stone are from the Whitby quarries at Cragmoor. The works have been designed by Messrs. Smith & Brodrick, architects, and carried out by Mr. George Higham, of Hull, the general contractor, the sub-contractors being Mr. George Taylor, mason, and Messrs. J. & T. Hall, joiners. It is believed that the building occupies part of the site of the grounds of the old Suffolk Palace, the erection of which, according to Sheahan and other local historians, was commenced by Sir Michael de la Pole, afterwards Earl of Suffolk. In the excavation for Messrs. Goddard's new premises, large pieces of hewn stone were dug up, one piece deserving special notice, as it was beautifully carved, and has been preserved as a memento by Messrs. Goddard & Son by being built into the side of the building under the archway. The architects express their opinion that it is a portion of the old palace, probably part of a carved stone roof.——On the west side of Savile-street are the premises of Messrs. A. Brown & Son, booksellers and stationers, which have been erected from designs by Messrs. W. Botterill & Son. The shop-front is of Ancaster stone, with recessed windows, the upper part being of red brick. The contractors for the building were Messrs. Musgrave & Son, and the furnishings were by Messrs. Curtis & Son, Leeds. The heating apparatus was supplied by Messrs. Perkins, London; and a hoist and the revolving shutters by Messrs. Bennett & Co., of Westminster.——The new premises of Mr. Henry Wilson, wine-merchant, form a conspicuous feature of Savile-street. They consist of a warehouse of four floors, the front part of the premises being devoted to offices and general business purposes. The cellars are all floored with the patent concrete flooring of Mr. Wilkinson, of Newcastle. The usual lavatory arrangements are of the best description, and were furnished by Messrs. Jennings & Co. The exterior is built of red stock brick, with dressings of Whitby stone. The architects were Messrs. Smith & Brodrick, and the builders Messrs. Geo. Jackson & Son, Witham, the carving being by Mr. Frith.

Salisbury.—The new Salisbury Middle Class School, erected for the Rev. W. Baker, has been completed. The school, which is only the first instalment of what will ultimately be a larger building, is built entirely of red brick, in the Queen Anne style, relieved by projecting chimneys, porch, and heavy mullioned windows, with small squares of glass, which are in many cases filled with ornamental lead glazing. Carved brick panels are inserted in the chimneys; they were executed by Mr. Harry Hems, of Exeter. The chimney-shafts rise from a dark tiled roof with red ornamental ridging. All the offices, kitchens, and stores, are in the basement. The dining-hall, class and master's rooms are on the ground floor, the two upper stories being devoted to the master's bedrooms, dormitories, and bath-rooms. The dormitories and dining-hall are large, lofty rooms. The schoolroom, which is of iron, is merely used temporarily until the other portion of the buildings is completed. The laundry is detached from the house. The architect is Mr. R. J. Withers, and the works have been carried out by Mrs. Hale & Sons, builders, of Salisbury, at a cost of about 6,000*l.*

Mr. Edison and the Electric Light.—A *Times* telegram, dated Philadelphia, Dec. 22, states that Mr. Edison claims to have discovered an effective, cheap electric light, which is a complete substitute for gas for household use. After fifteen months' experimenting, he accidentally discovered that burnt paper is the best substance to use, and he therefore abandoned platinum, devoting himself to perfecting this lamp. He cuts from cardboard a narrow strip, shaped like an elongated miniature horse-shoe, the strip being 2 in. long and ½ in. wide. This is placed in a wrought-iron mould, which is heated slowly to a white heat, driving off all volatile portions of the paper, which is then gradually cooled. The charred remains of the horse-shoe are taken carefully out, and are placed upright in a little glass globe, the wires of the generating machine being attached at the ends of the horse-shoe. The air being exhausted from the globe, it is sealed, completing a lamp costing about one shilling. This, Mr. Edison claims, will produce a bright mellow light, without flickering or pulsations. He has also invented a generator and regulator, his claim being that he has entirely solved the problem.

CHURCH-BUILDING NEWS.

North Ormesby.—The memorial-stone of the extension of the Church of the Holy Trinity, North Ormesby, Middlesbrough-on-Tees, has been laid by Mrs. Pennyman, of Ormesby Hall. The present church consists of nave, choir, chancel, north aisles, vestries, and north porch. The additions are south nave and chancel aisles, extension of nave westwards with additions to north aisle, tower and spire at south-west corner of nave, the lower part of which forms a west entrance and porch. The cost of the additions will be about 1,300*l.* The architects are Messrs. Armfield & Bottomley, and the contractors, Messrs. Allison, Bros., of Middlesbrough-on-Tees.

Wheatacre.—The chancel of Wheatacre Church, about five miles from Beccles, has been restored, under the direction of Mr. Phipson, architect and diocesan surveyor. From its age it had become a good deal out of repair. All the roofs were covered with thatch. The tower is a very fine piece of brickwork, erected late in the reign of Henry VIII., and has much good moulded brick detail, and flint panelling. The plaster ceiling, rotten timbers, and old thatch have been replaced by a trussed rafter open timber roof, in pitch-pine, boarded with the same material, and covered with green slates. The east and south windows have been restored in stonework, and the outside walls, which were covered with plaster, and had brick buttresses, have been faced in flint, new stone quoins and set-offs being introduced. The windows have been glazed with cathedral glass of a subdued tint. The passage and the space within the Communion-rail, have been laid with Minton tiles. The works have been executed by Mr. Allen, of Beccles, the total cost being a little over 300*l.*

Gwinear.—On the 2nd inst. St. Gwinear Church, after undergoing an extensive restoration, was re-opened by the Bishop of Truro. The church is a large and interesting building of the fifteenth century, with portions of an earlier church at the east end. It consists of nave and chancel, with one aisle on the south and two on the north, a north porch, and a western tower. The chancel was partially restored several years ago by Mr. Sedding, who repaved it with encaustic tiles, fitted it with new stalls of oak and an oak reredos, renewed the east window (an interesting specimen of tracery), and effected some other repairs, especially in the roof. This work remains unchanged, except that the east window has been raised 18 in., and the reredos and levels of the floor have been correspondingly elevated. The recent works were commenced by the renewal, some months since, of the whole of the roofs, the ancient roofs having become so decayed as to be positively dangerous, and quite past restoration. With the sole exception of the windows, a thorough restoration of the ancient fabric has been effected. The church is well lighted with the new "Hesperus" lamps, provided by the patentees, Messrs. Jones & Willis, of Birmingham, who have also supplied the curtains and the like fittings generally. The northernmost aisle, known as the "Arundel Chapel," has been separated from the church by a low screen (the gift of the rural dean, the Rev. Frederick Hockin, of Phillack), and will be used as a chapel for week-day and occasional services; the westernmost bay is devoted to the purposes of a vestry. The passages throughout the church are laid with large and massive slabs of rubbed Delabole slate, edged with borders of red, yellow, and black tiles. The architect (according to the *Western Daily Mercury*) was the Rev. F. C. Hingeston-Randolph, rector of Ringmore, and the builders were Messrs. Cara & Edwards, of Crowan.

Cratfield.—The parish church of Cratfield, Suffolk, has been re-opened, after restoration. The south aisle roof was so rotten that Mr. Phipson, the architect, was forced to condemn it altogether; and a new roof, with moulded timbers, braces, purlins, &c., all of pitch pine, has been put up, and the roof covered again with lead. The clearstory windows have been restored and glazed with cathedral glass, and the internal stone piers, capitals and bases, arches, quoins, &c., throughout the church, cleaned down and left perfect. The internal walls have been re-plastered, and the north and south aisle windows made good and re-glazed as far as necessary; but the outside walls of the church, which are covered with plaster, have, with the exception of the clearstory, not been touched. Wooden floors with oak curbs have been laid under the benching in the nave and aisles, and the latter have been benched with some of the old seats, and the nave with some plain pitch-pine benches. The passages are paved with Minton's tiles, all old monumental slabs being relaid. There was a very fine and interesting carved screen in the chancel arch some forty or fifty years ago, but about that time it was cut in half, and the head placed at the back of a west gallery erected at that time. This gallery has been removed, and the screen has been put roughly together again, and placed at the west end of the nave. The old Jacobean pulpit remains, but has been made larger, and some old Jacobean panelling has been formed into a prayer-desk. There is a very beautifully carved font of Perpendicular date, containing in its panels the seven sacraments, which we are glad to see is untouched. The work has been executed by Mr. Grimwood, of Weybread. The total cost of the present works, including the value of the old lead on the nave, sold to help to defray the expense, is about 860*l.* or 870*l.*

DISSENTING CHURCH-BUILDING NEWS.

Manchester.—A new Wesleyan chapel, erected at the junction of Plymouth-grove and Hyde-grove, has been opened. The chapel is built of stone, and is designed in the Early Gothic style. It is lighted by an arcade of windows on each side, and by a four-light window in the main gable. The internal dimensions of the building are 63 ft. long by 37 ft. wide. Sittings are provided for 350 persons. The roof is lofty, and in one span, wagon-headed in form, and divided into panels, with moulded ribs. The open seats, roof timbers, &c., are all of pitch pine. The entrance-doors are at each side of the chapel, and a narthex is formed by a wooden screen (glazed with cathedral glass) cutting off a passage-way, 8 ft. wide, the entire breadth of the building. Doors in the narthex, and again in the screen, protect the congregation from draughts. All the doors are arranged to open outwards. Vestries, class-rooms, and keeper's-house have also been built, and the total cost at present incurred will be about 5,500*l.*, including land and boundary walls. Ample space is reserved for a larger chapel,—contemplated at some future time, capable of seating 1,000 persons. The contract for the present buildings was entrusted to Mr. L. C. Webster, of Brook-street, and the works have been designed by Messrs. Hetherington & Oliver, architects, Carlisle, and carried out under their superintendence.

Bournemouth.—On the 17th inst. the new East Cliff Congregational Church was opened. The church has been erected on a site presented by Sir G. Meyrick, bart., and is situated near the East railway station. It is built of white brick, with white stone dressings, and moulded brick reveals to windows. It has a clock-tower 90 ft. in height. The interior is divided into two aisles, and the apse is provided with pulpit, organ, and a platform. It is 60 ft. long by 40 ft. wide, and including that in the gallery, sitting accommodation has been provided for 650 worshippers. In the basement a school, 40 ft. by 20 ft., and four class-rooms, have been constructed. The total cost exceeds 4,000*l.* The architects are Messrs. Kemp-Welch and Pinder, of Bournemouth, and the builder is Mr. Pike, of the same place.

SCHOOL BOARD SCHOOLS.

London.—At a meeting of the School Board for London, on the 10th inst., it was decided to accept a tender amounting to 8,300*l.* (exclusive of the cost of foundations) for the erection of a school for 1,200 children on the site in Reddin's-road, Derwent-road, Lambeth. It was stated that the cost per head of this school worked out at 7*l.* 5*s.* 8*d.*, the site having cost 2,500*l.* The Works Committee reported that the new schools in Edinburgh-road, and in Silver-street, Notting-hill, providing accommodation for 802 and 624 children respectively, had now been completed, and would be ready for occupation immediately after the Christmas holidays.

Hemel Hempstead, Herts.—The Queen-street Board School buildings consist of a schoolroom, 61 ft. long and 22 ft. wide, class-room, 20 ft. long, 16 ft. wide, fitted with galleries and desks, and a capacious porch, in which are conveniences for hats, cloaks, &c.; and also lavatories and drinking-cups for the children. The roofs are all open to the ridge, stained and varnished. Care has been taken to insure good ventilation The materials are the dark bricks of the locality, with red brick strings and decorations. The heads and cills of all the doors and windows are of Bath stone. The buildings were opened by the Chairman of the Board (Mr. John Evans, F.R.S., of Nash Mills), on which occasion he delivered an address on the work of the Board, and the progress made in education since its establishment in the town. The buildings have been designed by Mr. George Low, architect, London, and erected by Mr. William Sear, builder, of Hemel Hempstead, at a cost slightly in excess of 1,000*l.*

East Linton (Scotland).—The East Linton School Board have approved of plans and specifications for new schools, of which the estimated cost is 2,600*l.*

Norwich.—The foundation-stone has been laid of new school, lecture and class rooms, in connexion with Prince's-street Congregational Church. The buildings, which are situated at the corner of Redwall and Prince's streets, and occupy the whole space between them, the Congregational Church, and St. Michael-at-Plea Church-alley, will be a Classic structure of white brick, moulded and enriched. It will consist of a basement, ground, and first floors. The former, although 12 ft. 6 in. high, by taking full advantage of the incline of Redwell-street will be only partially underground. It will comprise a large infants' schoolroom, mothers' meeting-room, church parlour, class-room, ladies' retiring-room, hat and cloak rooms, and lavatories for all the school-children. Adjoining a kitchen will be the heating-chamber, from which the whole building will be warmed with hot water, in addition to the open fires in some of the rooms where cheerfulness is desirable. The ground-floor will contain an assembly or school room 62 ft. long by 39 ft. wide, with fourteen rooms arranged round it. Eleven of these will be class-rooms, the remainder will be for the secretary, the library, and the superintendents' private rooms. The height of the assembly or large school room will be 24 ft. to the springing of a large plaster panelled cove ceiling, which will have a lantern extending the whole length to give light; but the height from the floor to the top of the lantern will be 44 ft. The works are being carried out by Mr. John Downing, builder, of Pit-street, from the designs and under the superintendence of Mr. Edward Boardman, architect, Norwich, the whole of the plain and ornamental bricks for the exterior being supplied by Mr. G. Gunton, of Cossey.

STAINED GLASS.

London.—The east windows of Holy Trinity Church, Gough-square, Fleet-street, have been filled with stained glass, supplied by Messrs. Powell, of Whitefriars. The centre light has for its subject the Resurrection, with the figure of Christ standing at the empty tomb, with two sleeping angels below. Above and below are circular medallions of angels bearing scrolls and palm branches. The background is of diaper work in quarries.

Plymouth.—A memorial window has just been placed in St. Andrew's Church, Plymouth. The subject portrayed is the eight beatitudes. They are as follow:—Publican and Pharisee, the three Marys at the tomb, Joseph making himself known to his brethren, Simeon taking the infant Saviour in his arms, the Good Samaritan, the Annunciation, Abraham beseeching Lot that they should not quarrel, and the Martyrdom of Stephen. These subjects are surmounted by canopies designed as nearly as possible to old fifteenth-century glass. The tracery is filled at the top by the representation of our Lord speaking to the multitude, on the left side by Christ tempted, and on the right side by Christ ministered to by angels. The work has been executed by Messrs. Fouracre & Watson.

Great Sutton.—The west window of the new church of St. John the Evangelist, Great Sutton, has been filled with stained glass in memory of the late Mrs. Peter Owen. The window was designed by Mr. Henry Holiday, and executed by Messrs. Heaton, Butler, & Bayne.

Edinburgh.—Another of the series of memorial windows in St. Giles's Cathedral has just been completed. It occupies the window that has been for some time vacant, beside the organ. The illustrations are taken from the parables of "The Prodigal Son," "The Good Samaritan," and "The Good Shepherd." The principal

figures are in deep tones of brown, amber, and blue. The artists are Messrs. Ballantine & Son, of George-street, who have worked under the direction of Mr. Robert Herdman, R.S.A., and the Windows Committee.

Books.

The Pied Piper of Hamelin. By ROBERT BROWNING. Illustrated by JANE E. COOK, Author of "The Sculptor caught Napping." (King Alfred's School, Wantage). Printed for private circulation. 1879.

MR. ROBERT BROWNING'S popular version of the Legend of the Pied Piper of Hamelin, who first piped away all the rats of the town and afterwards all the children, because the burghers would not keep their promise, is well suited for illustration, and has afforded subjects to artists before now. No one, however, that we know of has illustrated the weird story so completely as the lady whose handsome book is before us. In nine folio plates Mrs. Cook has depicted all the prominent points of the legend, showing a playful fancy, power of expression, and much skill in drawing. As the sister of an architect, Mr. E. C. Robins, Mrs. Cook has an extra claim to our attention, but has no need of that to secure it. It is a pity that the book should be confined to her own circle.

VARIORUM.

"THE relative Advantages of Wind, Water, and Steam, as Motive Powers, compared with each other," by Samuel R. Goslin (John Warner & Sons, Cripplegate), is a valuable pamphlet, containing within a small space a large amount of valuable matter. It includes an illustrated description of the motors best suited for utilising wind, water, and steam-powers, and the author evidently knows what he is talking about.——A third edition is published of "Bevis's Improved System of Book-keeping, specially adapted for Builders and Contractors" (8, St. Martin's-place). It is enlarged by the addition of an appendix containing examples of the author's newly-introduced arrangement of entries, showing an advantageous extension of the system advocated.——The *Gardeners' Magazine* gives a Christmas number full of engravings of all sorts, including a Sheet Almanac, printed in colours. Pictures,—pictures,—everywhere pictures.——The Christmas number of the *Pictorial World* includes a number of coloured sketches. The lithographer and chemical engraver are pushing the wood-engraver off his stool.——Whitaker's Almanac (1880) is excellent. We place it amongst those books in which we always find what we think ought to be in them.——The third section of "Colchester Castle: a Roman Building," just now issued by Mr. Geo. Buckler (Benham & Co., Colchester), is a synopsis of the pamphlets of 1876 and 1877, and a register of many points which have been under discussion for thirty years past. It is offered by the author more particularly to those who regard Colchester Castle as the oldest and the noblest monument of the Romans in Britain, and, therefore, a monument of national importance. We are bound to say that a not very minute examination of Colchester Castle, made by us some years ago, did not lead us to the conviction that it was a Roman structure. Mr. Buckler's long-continued study of the subject, however, entitles his opinion to respect.

Miscellanea.

New Post-office, Dudley.—On the 19th inst. the new post-office in Wolverhampton-street was opened to the public. The building has been erected by Messrs. Nelson & Son, from designs by the Government architects, which (says *Aris's Birmingham Gazette*) are not at all pleasing. The total cost will approach 4,000*l.*, the land having cost 3*l.* 3*s.* per square yard.

The Royal Society.—No. XXIX. of the "Proceedings of the Royal Society," just issued, includes the President's address and the accounts of the various Funds at the disposal of the Council for scientific and charitable purposes. The digest of papers read at the meetings is brought up to December.

A Riot on Birmingham.—The death-rate in Birmingham the week before last was equal to a yearly average of 33 per thousand. The average rate in twenty-two large towns was 31 per thousand.

Sanitary Condition of the City of London.—In the *Builder* for the 8th ult. (p. 1248), we briefly referred to the fact that the Greystoke-place Board school (a new structure) had been closed, owing to an outbreak of fever, due in some measure, according to a report made to the City Commissioners of Sewers by Dr. Sedgwick Saunders, to the insanitary condition of the school. The School Board for London subsequently appointed Dr. Alfred Carpenter, of Croydon, to inquire into and report to them upon the sanitary condition of the school, and at the meeting of the Board on the 17th inst. the Works Committee presented Dr. Carpenter's report. Dr. Carpenter says, "I am bound to say that a most searching inquiry did not discover any serious defect in the construction of the drains to the school. I examined into the whole of the connexions which exist between the drains and the interior of the school; some slight defects were found, capable of easy rectification, but nothing whatever to justify the idea that the school was from this cause 'a pestilent and insanitary area.'" Dr. Carpenter carries the war into the enemy's country when he says:—

"After searching diligently, and failing to find within the school buildings sufficient reason for the illness which undoubtedly existed among the children, and, still further, a condition of things which would account for their poor state of health, I thought it my duty to visit some of the homes of those who attended the school. I had not far to go before I found sufficient evidence to account for pallid cheeks, flabby looks, and feeble health. In my endeavour to search out the truth regarding the allegations contained in the medical officer's report, I did not find that the parents generally imputed the illness of their children to infection received at the school. It was generally said to be in "the court" or "place" before their children had failed with it. I examined the water supply provided for these people; it was stored in old tubs, the place of storage being in the most filthy position; the offensive condition of the closet accommodation provided for these poor people being almost beyond conception. I should not have thought that it could have been possible for such a state of things to have existed within a few yards of one of the main arteries of the City of London."

The school has been re-opened.

Dioptric Lenses for Gas-Lighthouses.—Mr. John S. Sloane, C.E., late Engineer to the Commissioners of Irish Lights, has suggested certain improvements in the arrangement of dioptric lenses for gas-lighthouses. He does not propose to interfere with the upper reflecting prisms, but would, without hesitation, if necessary, sacrifice the lower, and by suspending the different annular polyzonals between wrought-iron grooved frames of light but (from their section) rigid description, with pulleys and balance-weights make their use comparatively easy. At Hasborough, Howth, Wicklow, and Mine Head, two panels, representing 90° of azimuth for each augmentation of flame to seaward,—i.e., six lenses in addition to those at present in use,—would, from the situation, be sufficient. For Hook Tower he would propose nine lenses in addition to the eastward, in three groups—in either case the lenses of each power to be attached, so as to move up and down within the frames as one, somewhat like an ordinary sash-window. There would then be a set for the 28 and 48 jet burner, inclusive, and for the 68, 88, and 108, in each degree or point of azimuth; and as all the lights mentioned are fixed, or have apparatus suited for fixed lights, the object would be easier of attainment than if revolving. The cost of these improvements would be, he urges, comparatively trifling, when considered in relation to the immense advantage to the mariner, and to the great saving that the gaslight has effected since brought into use on the coast, unlike the electric light, which, he says, has been a source of great expense, anxiety, and uncertainty, and is useless in fogs, or even in ordinary thick weather.

Fires.—The Town-hall and Plait Market, Dunstable, were completely destroyed by fire on the 17th inst. The building was erected five years ago at a cost of 3,000*l.*——On the night of Friday, the 19th inst., a fire broke out in the extensive saw-mills of Messrs. Roberts, Williams, & Co., Cranmer-street, off Stanley-road, Northend, Liverpool. Before the arrival of the fire-brigade, the flames had gained complete mastery over the building.

Fall of a Cornice.—At Sheffield, on Saturday last, a serious building accident took place at some bank premises in course of erection for the Midland Company. The cornice along one side, composed of massive stones, suddenly fell a distance of 30 ft. into the street, smashing some capitals, and knocking down the hoarding. Three men who were working below were severely injured,—one beyond hope of recovery.

Crystal Palace School of Practical Engineering.—The certificates of merit awarded to the students of this school for proficiency in the winter term just closed were distributed on Saturday last in the lecture-room of the school in the south tower of the Palace. Mr. M'George, the new chairman of the Palace Directors, presided, and the certificates were distributed by Mr. George Berkeley, C.E. Mr. Shenton, the superintendent, read the report of the examiners, which stated that the number of students of the first year's course who had attended the lecture examination in "materials and their manufacture," was twenty-six, of whom twenty were eligible for examination, and ten passed satisfactorily, and that the second year's students of the civil engineering section showed considerable ability in the surveys, Parliamentary plans, working-drawings, and specifications, both in regard to the quality and the amount of work done. Mr. Berkeley, in the course of a brief address to the students, said the grand object of an engineer was to find out and direct the great sources of power which were contained in nature to the use and convenience of men. In recent years that power had been much developed. One of the features of the present day was the extraordinary advance which had been and was being made in the manufacture and appliances of steel, and another feature was the application of the marvellous power of electricity, as shown in the telephone and microphone, by means of which persons who were miles apart could converse and transact business in a few minutes or seconds which formerly took hours to accomplish. In the application of force a knowledge of chemistry was most important to an engineer, and he recommended that instruction in that science should be added to the curriculum of the school.

Rateable Value of the Metropolis.—The following particulars are taken from the list of the totals of the gross and rateable values of the valuation lists of the several parishes and unions in the metropolis, as shown by the supplemental valuation lists sent to the clerk to the managers of the Metropolitan Asylums District, which will come into force on April 6th, 1880:—

Bethnal-green, 324,005*l.* 5*s.*; Camberwell, 690,304*l.*; Chelsea, 423,851*l.*; Hampstead, 374,443*l.*; Islington, 1,280,831*l.*; Kensington, 1,472,986*l.*; Lambeth, 1,174,903*l.*; Marylebone, 1,328,144*l.*; Mile-end Old-town, 318,356*l.*; Paddington, 1,131,616*l.*; St. Pancras, 1,336,890*l.*; Shoreditch, 520,035*l.*; St. George-in-the-East, 191,739*l.*; St. Giles-in-the-Fields and St. George's, Bloomsbury, 336,300*l.*; Lincoln's-inn, 18,011*l.*; Fulham Union, 446,909*l.* 10*s.*; St. George's Union, 2,098,902*l.*; Greenwich Union, 523,409*l.*; Hackney Union, 827,375*l.*; Holborn Union, 835,724*l.*; Gray's-inn-place, 14,647*l.*; Lewisham Union, 533,664*l.*; St. Olave's Union, 773,564*l.*; Poplar Union, 611,506*l.*; St. Saviour's Union, 883,750*l.*; Stepney Union, 298,943*l.*; Strand Union, 639,158*l.*; Wandsworth and Clapham Union, 1,028,111*l.*; Westminster Union, 693,039*l.*; Whitechapel Union, 356,908*l.*; Woolwich Union, 264,991*l.*; City of London Union, 3,313,523*l.* 6*s.*; the Middle Temple, 10,929*l.* The total gross value of the metropolis is 30,418,604*l.* 9*s.* 6*d.*, and the total rateable value, 25,055,674*l.* 3*d.*

Chepstow Bridge Works.—So much interest is felt in the prosperity of the Chepstow Bridge Works (Edward Finch & Co., Limited) as affording employment to a large number of the inhabitants of Chepstow, and consequently identified to a considerable extent with the well-being of the town, that we are glad to hear that the *employés* are again so busily engaged that extra exertions are necessary, and that orders have just been received for a series of steel masts for iron-clad vessels which are being constructed for the Admiralty. The lattice-girder bridge which is being completed at these works for the Indian State Railways is likely to add to the reputation which Finch & Co. already enjoy. The bridge alluded to is made for a single line on the North Punjab Railway, designed to open up better communication with Afghanistan, and contains ten spans of 120 ft. each, with several smaller spans, the total weight of iron being about 1,000 tons. The firm are completing and sending forward to London for shipment one 120-ft. span per week.

Organ, Upton Old Church, Slough.—The new organ for this church, to be presented by the Misses Nixey, is being erected in the chamber prepared for it. It has been built by Messrs. Walker, and the case is from a design by Mr. J. Oldrid Scott.

Royal Albert Hall.—"The Messiah" will be given here on Friday evening, 26th inst., and on Thursday evening, January 1st; in the first case by the Royal Albert Hall Choral Society, and in the second by Mr. Carter's Choir, eminent soloists assisting at both presentations.

"**Opera Comique.**"—Mr. D'Oyly Carte was polite enough to invite us to the representation of Messrs. Gilbert & Sullivan's "Pinafore" by children, a treat provided in the mornings for other children during the holidays, and we feel bound in return to say a word or two about it for good or for ill. For ill, however, it certainly shall not be, for the cleverness displayed, the result of strict training, is remarkable; several of the mites act delightfully, in fact; but if Master Tom or Miss Rosie consult us on the subject, we shall, in strict confidence, of course, advise them to get papa to take them in the evening and see the real thing. The music is so charming, and the joke so good, it would be a thousand pities if they did not hear and see the piece at its best. At one time or another, however, let them not fail to go. Mr. George Grossmith, jun., who has materially helped to make the fortune of this theatre, brightens up the morning with an original drawing-room entertainment, called "A Juvenile Party," written as well as sung by himself.

TENDERS

For alterations and additions to the Surrey County Lunatic Asylum, Wandsworth. Mr. C. H. Howell, architect. Quantities by Mr. John Scott and Messrs. Widnell & Trollope:—

Smith & Co.	£40,884	0	0
Adamson & Sons	36,965	0	0
Peto	35,848	0	0
Holland & Hannen	35,814	0	0
Browne & Robinson	35,560	0	0
Chappell	35,431	0	0
Brass	35,312	0	0
Trollope	34,990	0	0
Nightingale	34,638	0	0
Higgs & Hill (accepted)	34,234	0	0

For the erection of Barton House, Cambridge, for Mr. S. Holben. Mr. Alfred R. Pite, architect. Quantities by Mr. Joseph Rookwood:—

Patman & Fotheringham	£3,685	0	0
Thoday & Son	3,390	0	0
Forrest	3,387	0	0
Falkner	3,247	0	0
Smith	3,153	0	0
Nightingale	3,063	0	0
Bell & Sons	2,943	0	0
Jacklin	2,897	0	0

For St. Catherine's Wesleyan Schools, Derby-street, Lincoln. Mr. C. Bell, architect. Quantities supplied:—

Middleton	£1,297	4	3
Close & Co.	1,169	0	0
Benton	1,136	0	0
Crosby & Sons	1,134	0	0
Allman	1,123	0	0
Hatcliffe & Bell	1,119	0	0
Walter & Henshman	1,098	0	0
Horton & Warrener	1,098	0	0
Drury	1,092	0	0
Young	1,085	0	0
Binns, Brothers	1,065	10	0
Cox	1,054	0	0
Woolhouse, Brothers	1,050	0	0
Baines	1,050	0	0
Otter & Elsey	1,040	0	0
Harrison	1,010	14	0
Kidd	998	0	0
Barnes & Wright	970	0	0
Weighel	969	0	0
Cowen & Lansdown (accepted)	925	0	0

For building ambulance sheds, Hammersmith, for the Fulham District Board of Works. Mr. Alfred C. Bean, architect. Quantities supplied by Mr. Alfred J. Bean:—

Edwards & Co.	£217	0	0
Lucas & Son	200	0	0
Eyles	197	10	0
Crosse	189	10	0
Williams	187	0	0
Craske	186	0	0
Johnson	178	0	0
Haines	175	0	0
R. & E. Smith	165	0	0
Scott (accepted)	165	0	0

For completion of house (at present in carcass) in St. Mark's-road, North Kensington, for Dr. H. E. Pocock. Messrs. Hills & Fletcher, architects:— — —

Whiteley	£1,241	0	0
Handover	1,200	0	0
Gregar	1,095	0	0
Sharpe & Everard	1,041	0	0
Dover & Long	995	0	0
Cowland, Brothers	968	0	0
Sheffield & Prebble	967	0	0
Alexander	874	0	0
Jolliffe (accepted)	780	0	0

For alterations to the Rose and Crown, Goswell-road, for Mr. Brunsden. Mr. H. J. Newton, architect:—

Grimwood	£498	0	0
Taylor	477	0	0
Godden	473	0	0
Marr	399	0	0
Lamble (accepted)	391	0	0

For the erection of sculptor's studio and residence, Belsize-lane, Hampstead, for Mr. J. M. Griffith. Mr. Walter Graves, architect. Quantities by Mr. Burnett:—

Patman & Fotheringham	£2,980	0	0
Toms	2,916	0	0
Haynes	2,850	0	0
Hunt (too late)	2,808	0	0
Longmire & Burge	2,780	0	0

The contract for providing the waterworks of the town of Aldershot with an additional supply of about 100,000 gallons per day of ten hours, from the chalk springs, has been entrusted to Messrs. Le Grand & Sutcliff, and the boring operations have already been commenced.

The tender of Messrs. E. Downs Kennedy & Co., of 70, New Corn Exchange, Mark-lane, has been accepted by the Richmond Vestry for granite and flints.

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R. M. T.—A. J.—W. S.—Old D. Trap.—R. H.—A. F. R.—J.—J. A. S.—C. S.—Mr. H.—W. G.—C. H.—L.—K.—W. & P.—H. W. P.—H. & F.—A. R. P.—J. C.—R. G. A.—C. H. & Sons.—C. L. S. (the employer always pays in one shape or another for taking out the quantities, and therefore, so far as that goes, need not object to make the payment direct to his architect for this service if performed. The commission charged is regulated to some extent by the amount of contract).—J. H. (the gentleman addressed is dead).—H. S. (thanks; no).—R. B. (next week).—W. R. P. (next week; too late for this).—J. N. (next week).—C. & Son (next week).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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